

Foundations of Finance

Spring 2021

COR1-GB.2311.31

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Office hours See course website, or by appointment

Teaching Assistant: The TA's information is posted on the class website under Content/Syllabus. Any questions regarding the problem sets should be addressed to the TA.

Online Learning Management System: We will be using the new NYU Brightspace platform available at <https://brightspace.nyu.edu>. Brightspace is a new Learning Management System (LMS) that is being piloted this semester, including in this class. Brightspace makes substantial improvements to NYU Classes, but since this is a fairly new system there may be a few hiccups along the way. That said, using this system should greatly improve the overall class experience. Please reach out to me or the TA at any point if you have any issues.

The majority of the course materials can be found under the "Content" tab. This "Content" tab will have slides, links to the review problem videos, suggested problem lists, and much more. Announcements will be posted on this site and will be e-mailed to you unless you opt-out of the emails. Homework assignments can be found under "Assignments" and will be submitted there. The discussion board is under "Discussions." Exams are accessible under "Quizzes." Links to the Zoom lectures and recordings are available under "Zoom."

Class time: This is an online class. The class meets once week on Tuesday, from 6:00pm to 9:00pm. Typically the class will consist of 2.5 hours of Zoom lecture from 6-8:30pm with a 15 minute break in the middle. You will then have the remaining 30 minutes to work through review problem videos that will be posted on the class website. You are free to review these

videos at a time other than the scheduled class time. That said, for those of you that want the lecture materials to be contained in the 3 hour scheduled window, this will permit that.

There will be a midterm exams held in classes 5 and 8, which will take up the first 90 minutes of class, followed by a 15 minute break. As a result, during the midterm weeks, the Zoom lecture will run from 7:45pm to 9:00pm. The final exam will be held during week 12 and will take up the full scheduled class time.

Zoom Lectures: You are expected to attend the Zoom lecture during the scheduled time each week. The lectures will be recorded if for some reason you can't make a particular class. The link to the scheduled lectures and recordings can be found on Brightspace under the Zoom tab. Some helpful tips for using Zoom for class can be found [here](#). There is also a guide to Zoom posted on Brightspace under Content/Zoom Guides. I'd like to emphasize:

- Keep your camera on while attending class.
- Mute your microphone if you aren't speaking.
- Use the raise hand function if you'd like to speak up or have a question.
- Set your name to your preferred name and include your last name. If your preferred name differs from the name you are registered under, please include that name in parenthesis, so I can match you to your records for grading. This should be automatic if you use your NYU Zoom account.
- You will need to be logged in to your NYU account through Zoom to access the Zoom meetings.

Important dates: All important dates and deadlines can be found in the schedule at the end of this syllabus.

Content: The course is a rigorous, quantitative introduction to financial market structure and financial asset valuation. The main topics of the course are the time value of money, portfolio selection, equilibrium asset pricing (CAPM), arbitrage pricing, fixed income securities and derivatives. There is also a short section on project valuation.

You are expected to understand valuation formulas and be able to apply them to new problems. The appropriate tools necessary for solving these problems will be developed at each stage and practiced in the homework assignments. The models we will cover have immediate applications and implications for real-world financial decisions. I will emphasize how the course material relates to current financial events.

Prerequisites: To succeed in this class, you must be comfortable with statistics, algebra, and microeconomics. You are strongly encouraged to study the review handout on statistics at the beginning of the semester. Alternatively or additionally, the Quantitative Review in Appendix A of BKM will help you refresh the statistics material.

Reading materials: The main class material is posted under the Content tab on NYU Brightspace. It contains all slides that I use in class, the technical notes (TN) for some lectures, handouts with important material covered in class, problem sets, and sample exam questions. You will want to take notes during class because I will fill in the slides with additional material. I will post my annotated slides on the course website after each lecture.

The other texts for the course are:

1. “Investments” by Zvi Bodie, Alex Kane, Alan J. Marcus, 10th edition;
2. “Student Solutions Manual to accompany Investments” by Zvi Bodie, Alex Kane, Alan J. Marcus, Alan Marcus, 10th edition;
3. Selected material from “Essentials of Corporate Finance” by Stephen A. Ross, Randolph W. Westerfeld, Bradford D. Jordan, 6th edition.

Most of our material is covered in [1], abbreviated BKM below. If you have a different edition of BKM (11th, 9th, 8th, or 7th), you are fine, there are only minor changes between recent editions. However, page and chapter numbers may vary. If you use an edition other than the 10th, it is your responsibility to find out the differences with the 10th edition. The solution manual [2] will come in handy when doing practice problems. The material in [3], abbreviated RWJ, is covered only in class 2, and we will only use chapters 5 and 6. These two chapters are included with the course materials available from the NYU bookstore.

The textbooks are your source to review the material. BKM is often very good and tightly linked to what we will cover, but at other times the link is weaker. That said, it is currently the best book on the market for our purposes, and you will likely find it useful to prepare before class and to go over the material after class. While it is possible to succeed in this class without the textbooks, I recommend reading them.

Staying up to date: You should also follow financial and macroeconomic news in publications such as Financial Times, Wall Street Journal, Bloomberg, or The Economist. I will occasionally post and discuss articles that are relevant to the topics we study throughout the semester.

Calculator: You need a calculator for this class. Make sure your calculator can handle

logarithms and exponentials. Please have your calculator ready to use during class. You are expected to learn how to operate the calculator on your own. You do not necessarily need a financial calculator, but can use one if you choose.

Some homework problems will require you to use Excel. Every student of Stern is expected to be comfortable with Excel. In particular, any Finance Area major is expected to have knowledge of Excel that extends beyond familiarity to awareness of the uses and limitations of this technology.

Communication: The class website is on NYU Brightspace at <https://newclasses.nyu.edu/>. This is the central location containing all teaching materials. Class announcements will be posted here. Solutions to each problem set will be posted after the due date. The class website also contains concept questions (see below), suggested problems, and some finance-related links and articles.

There is a discussion board where the TA and I will answer your questions on a regular basis. Please do not e-mail me about questions regarding the class notes, problem sets, or related materials. Instead, post the question on the message board of the class site and we will respond there. That way the entire class benefits from the question.

Grades: Grades will be based on:

- Exam(s) grade (65 percent). This is calculated as 25 percent from your highest midterm and 40 percent from the final exam. That is, I will drop your lowest midterm score.
- 3 problem sets (30 percent).
- Class participation (5 percent).

The exam grade is designed so that you can miss one of the midterm exams, but incentivizes you to take them all. Taking all of the exams can only help you and this structure will make it easier to get used to the exam format. Makeup exams are not offered. You must take the final exam.

Class participation is strongly encouraged. This includes attending scheduled Zoom lectures, having your camera on, asking questions, participating in polls, and participating in Zoom breakout groups.

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 20 students in which a maximum of 35% of students will receive an “A” or “A-” grade.

Exams: The exams test your understanding of the key concepts in the class. The midterm exams are not designed to be cumulative, but much of the material builds on itself throughout the semester. I strongly encourage you to keep up with the course material as the semester progresses. The final exam is cumulative.

The exams do not test your ability to memorize or to use your calculator. As a result, they may be more challenging than the exams you are used to. To prepare for these exams, you should review the slides together with your own class notes, the handouts, the concept questions, the textbook readings, the problem sets, the sample exam questions, and potentially the suggested problem sets and suggested readings.

The exams are open book, but *must* be taken individually. I take violations of this policy very seriously. Any violation will be referred to the Dean’s office and, at minimum, will result in failing this class. I trust that each of you will adhere to this policy.

The exams must be taken during the scheduled 90 minute windows for midterms and 180 minute window for the final exam.

Class Recording: I will record every class. This is not a replacement for attending class on a regular basis, but should allow you to review key materials, and to keep up with the class in case you are absent.

Concept questions: The course website includes around 100 concept questions along with solutions. The concept questions test your understanding of the key ideas covered in class on that day. After you have reviewed the material from class, it should take you no more than 2 minutes on average to complete every question. The concept questions are not graded, but are good preparation for the exams and a useful tool for keeping up with the material. I very strongly encourage you to complete them.

Problem sets: There will be 3 problem sets over the course of the semester. Each problem set contains an Excel question, emphasizing a practical implementation of a concept from class.

You are encouraged to work in groups on the problems, but you must hand in your own write-up. Acknowledge any help you received on the front page of your submission. They are meant to help you begin to apply the tools developed in class.

Late problem sets are not accepted. The problem sets are due by the end of class on the scheduled dates.

Suggested problems: Suggested problems from the text book are posted on the website. These questions are intended to give you extra practice over and above the homework. 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 a lot of practice problems is key in this class. I encourage you to not immediately look at the solutions to the problems. Most successful students work out their own solution and then check it against the solutions manual.

Academic integrity: Academic integrity and honesty is central to our mission as an educational institution. The [MBA Code of Conduct](#), which all students sign, therefore places particular emphasis on academic integrity. Notably this includes refraining from any method or means that provides an unfair advantage in exams or papers, and clearly acknowledging the work of others in your own work. As a reminder, the entire Code of Conduct is available [here](#).

Student accessibility: New York University is committed to providing equal educational opportunity and participation for students with disabilities. Students who are interested in applying for academic accommodations are advised to reach out to the Moses Center for Student Accessibility (CSA) as early as possible in the semester. If you already receive accommodations through CSA, you are encouraged to request your accommodation letters through the Moses portal as soon as possible.

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, <http://www.nyu.edu/csa>.) 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: Classes can get stressful. I encourage you to reach out if you need help. The NYU Wellness Exchange offers mental health support. You can reach them 24/7 at 212 443 9999, or via the “NYU Wellness Exchange” app. There are also drop in hours and appointments. Find out more at <http://www.nyu.edu/students/health-and-wellness/counseling-services.html>

Course schedule: Below is a detailed schedule for the class. Handouts are marked “H” and technical notes are marked “TN”. Note the homework due dates and exam dates.

| Class | Date | Topics | Description | Main Reading | Suggested Reading | Homework |
|-------|----------|--|---|---|----------------------------------|-----------------|
| 1 | T 9-Feb | Financial Instruments Financial Markets | Course overview; financial instruments Financial Markets | Syllabus; BKM 1.1-4 BKM: 3.1-8 | BKM 1.5-7, 2 | |
| 2 | T 16-Feb | Performance of Securities | Present and future value, annuities, perpetuities Compounding and measuring returns | RWJ 4, 5.1-2; H 1-2 RWJ 5.3-4; BKM 5.1-2, 5.4; H 3-5, 14 | TN 1 BKM 5.3, TN 2 | |
| 3 | T 23-Feb | Portfolio Choice I | Portfolio choice and portfolio returns; Efficient portfolios with two risky securities Efficient portfolios with two risky securities; Optimal portfolios and investor preferences | BKM 5.5, 7.1-2, 6.1-2; H 6-9 | TN 3 | |
| 4 | T 2-Mar | Portfolio Choice II | Efficient and optimal portfolios with a riskless asset Efficient and optimal portfolios with multiple risky assets | BKM 6.3-5, 7.3-4 BKM 8.5, 9.1; H 10-11 | | HW 1 Due |
| 5 | T 9-Mar | Midterm Exam 1 CAPM | Brightspace. 75 Minutes. Zoom starts at 7:45pm. Introduction to The Capital Asset Pricing Model | BKM 9.1-2; H 12 | | |
| 6 | T 16-Mar | CAPM | Applications of the CAPM; Beyond the CAPM | BKM 13.1, 13.3 | | |
| 7 | T 30-Mar | Equity Valuation Arbitrage | Dividend discount models and valuation ratios Arbitrage and the Law of One Price | BKM 18.1-4; H 15-16 H 17 | | HW 2 Due |
| 8 | T 6-Apr | Midterm Exam 2 Fixed Income Securities | Brightspace. 75 Minutes. Zoom starts at 7:45pm. Bond prices and yields | BKM 14.1-4; H 18-19 | BKM 14.5 | |
| 9 | T 13-Apr | Fixed Income Securities | Bond returns, forward rates, and the yield curve The yield curve; Duration | BKM 15.1-6; H 20-22 BKM 16.1-2; H 23-24 | TN 4 | |
| 10 | T 20-Apr | Fixed Income Securities Options | Duration and immunization Option basics and strategies | BKM 20.1-3; H 25-26 | | |
| 11 | T 27-Apr | Options | Option strategies and arbitrage bounds The Black-Scholes-Merton option pricing formula | BKM 20.4, 20.1-2; H 26-27 BKM 21.3-5 | BKM 20.5, 20.7; TN 5 BKM 21.6 | |
| 12 | T 4-May | Final Exam | Brightspace. 180 Minutes. Comprehensive. | | | HW 3 Due |