

# Foundations of Finance

Fall 2013  
FINC-UB.0002.01-03

**Instructor:** Prof. Alexi Savov

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Office hours M 11:00am–12:00pm, W 3:30pm–4:30pm, or by appointment

**Teaching Assistants:** The TAs fro this class are David Ahn (tda223@stern.nyu.edu), Ryan Liu (yl792@stern.nyu.edu), and Frank Lu (bcl264@stern.nyu.edu). Their office hours will be posted on the class website and announced in class. They will teach a review session on how to use a financial calculator after the second class (place and time will be posted on the class website and announced in class).

**Class time:** The class meets twice a week on Mondays (M) and Wednesdays (W):

Section	MW Meeting time	Classroom	Final exam
1	8:00am–9:15am	Tisch-LC25	W 12/18, 8:00am–9:50am
2	9:30am–10:45am	Tisch-LC25	M 12/16, 8:00am–9:50am
3	2:00pm–3:15pm	Tisch-201	M 12/16, 2:00pm–3:50pm

The first class is on W 9/4 and the last class is on W 12/11. There is no class on M 10/14 (fall break). The midterm is on W 10/23, in class. The final is held in the usual classroom. You must take the final in the section for which you are registered.

**Classroom civility:** Respect your classmates. Each lecture starts and ends on time. I understand your busy schedules, but please try not to arrive late. Turn off cellphones and other audible devices before entering class. Do not engage in side conversations. Repeated class disruption will be reflected in your grade. If you must miss a class or arrive late, please let me know by email ahead of time.

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<sup>1</sup> and the NYU Disruptive Behavior Policy.<sup>2</sup>

**Reading materials:** The main class material is in the course pack that I will hand out in the first class. It contains all PowerPoint slides that I use in class, handouts with important material covered in class, problem sets, and practice exam questions. Be sure to take notes during class; space is available next to the slides and on the left page. The handouts at the end of the course pack are there to alleviate the amount of writing you need to do.

The textbooks for the course are

1. "Essentials of Investments" by Zvi Bodie, Alex Kane, Alan J. Marcus, 9th edition;
2. "Student Solutions Manual to accompany Essentials of Investments" by Zvi Bodie, Alex Kane, Alan J. Marcus, Alan Marcus, 9th edition;
3. Selected material from "Essentials of Corporate Finance" by Stephen A. Ross, Randolph W. Westerfeld, Bradford D. Jordan, 6th edition.

Most of the class material is covered in [1], abbreviated BKM below. If you have an earlier edition of BKM (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 9th, it is your responsibility to find out the differences with the 9th edition. The solution manual [2] will come in handy when doing practice problems. The material in book [3], abbreviated RWJ, is covered only in classes 3 and 4, and we will only use chapters 5 and 6. These two chapters are included with the course materials available from the NYU bookstore. If you did not buy your course materials through the bookstore, you can purchase [3] separately on the publisher's web site. (Go to <https://create.mcgraw-hill.com/shop/#/catalog/details/?isbn=9780390169501>. The booklet can be found under Prof. Stijn van Nieuwerburgh's name. Item [3], ISBN 9780390169501, price \$14.63.)

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<sup>1</sup><http://www.stern.nyu.edu/portal-partners/current-students/undergraduate/resources-policies/academic-policies/index.htm>

<sup>2</sup><http://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/bullying-threaten-and-other-disruptive-behavior-guidelines.html>

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 relying on the textbooks, I recommend purchasing them.

**Staying up to date:** The class web site on NYU Classes contains links to recent articles in the financial press that complement the lectures. You are encouraged to follow financial and macroeconomic news in the Financial Times, Wall Street Journal, or The Economist. If you encounter an interesting article that you would like to share with the class, send me an email and I will post it on the class website. This section of the website is regularly updated during the semester.

**Calculator:** You need a calculator for this class. It is an advantage to have a financial calculator, but not a requirement. If you plan to take other finance classes, you will get good use out of a financial calculator. Please bring your calculator to class.

Standard financial calculators include the HP 12C (costs about \$60), the HP 10B-II (costs about \$25) and the TI BA-II Plus (costs about \$30). You are expected to learn how to operate the calculator on your own. However, you can get help by attending the TAs' review session (after class 2) or their office hours. I have also included some slides in the course pack on how to work with a financial calculator.

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 Classes 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; solutions will not be distributed in class.

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 TAs and I will participate on a regular basis to answer your questions. You are encouraged to answer each others' questions.

**Grades:** Grades will be based on the final exam (45 percent), the midterm exam (30 percent), problem sets (20 percent), and class participation (5 percent). Class participation is strongly encouraged.

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.

**Academic integrity:** Integrity is critical to the learning process and to all that we do here at NYU Stern. As members of our community, all students agree to abide by 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 ones 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 entire Stern Student Code of Conduct applies to all students enrolled in Stern courses and can be found here: <http://www.stern.nyu.edu/uc/codeofconduct>. Violations of the Code of Conduct will be prosecuted with a minimum penalty of failure for the course, as required by code rules. If you become aware of any violations of the code, you must take whatever steps are necessary to stop the violators.

Per request of the dean, you must include a signed statement at the top of each problem set and exam, indicating that you adhere to the Code of Conduct. The statement is: *“I pledge my honor that I have not violated the NYU Stern Student Code of Conduct in the completion of this exam/problem set.”* It is in your best interest that potential employers know that Stern takes honesty seriously. Stern’s reputation adds to the value of your degree.

**Students with disabilities** If you have a qualified disability and 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 Students with Disabilities (CSD, 998-4980, <http://www.nyu.edu/csd>) verifying your registration and outlining the accommodations they recommend. If you will need to take an exam at the CSD, you must submit a

completed Exam Accommodations Form to them at least one week prior to the scheduled exam time to be guaranteed accommodation.

**Exams:** The midterm and final exams test your understanding of the key concepts in the class. They 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 (at the end of the course pack), the concept questions, the textbook readings, the problem sets, the sample exam questions, and preferably the suggested problem sets and suggested readings. The final exam is cumulative.

You will be allowed one double-sided page of notes for the midterm exam and two double-sided pages of notes for the final exam. The sheets must be no larger than 8.5 inches by 11 inches. There are no restrictions on the content of the formula sheets, except that you are not allowed to reprint my PowerPoint slides verbatim. You will be asked to turn in these formula sheets after the midterm and final exam, but you will be able to recover the midterm sheet in the week after the midterm.

You are not allowed to take the exam questions home, and no written answers will be provided. There will be a post-midterm evaluation in class. Once graded, you can come visit your midterm in my office during office hours, or by appointment. The same rules apply to the final. If you have to miss an exam, you will be required to make it up after the semester is over. Due to University regulations as confirmed by the Dean's office, students must take the final exam with their assigned section. Unfortunately, I have no discretion on this matter.

**Concept questions:** After each class, concept questions are posted on the website. The concept questions test your understanding of the key ideas covered in class on that day. There are typically five multiple choice questions per test. After you have reviewed the material from class, it should take you no more than 10 minutes to complete the concept questions.

Every concept test is available for ten days, starting at the end of class. When you submit your answers, you will see a screen with your score and the correct answers. I encourage you to print or save the answers as this is the only time you will see them. I will re-post the concept questions as the midterm and final exams approach, but I will not make the answers available in order to encourage you to do them on time.

The concept questions are good preparation for the exam and a useful tool for keeping up with the material. While not formally part of your grade, I strongly encourage you to complete them.

**Problem sets:** There will be 4 problem sets over the course of the semester. Each problem set contains an Excel question, emphasizing a practical implementation of a concept from class. The problem sets are graded on a 5-point scale.

Late problem sets are not accepted. You are encouraged to work in groups on the problems, but you must hand in your own write-up and you are asked to acknowledge any help you received on the front page of your submission. The homework questions are in the spirit of the exam questions, 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 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]. The solutions to the questions in the RWJ booklet are included in the course material from the bookstore. Solving lots of practice problems is key in this class.

**Study groups:** I highly recommend that you regularly review the class material in your study group. Do not wait until exam time to meet with your group. By then it will be too late. Remember to hand in your own answers to the problem sets.

**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 news.

**Prerequisites:** To succeed in this class, you must be comfortable with statistics, calculus, and microeconomics. You are strongly encouraged to study the review handout on statistics (H0 near the back of the course pack) at the beginning of the semester. Alternatively or additionally, the Quantitative Review in Appendix A of BKM will help you refresh the statistics material.

**Course outline:** Below is a detailed schedule of the date and topic of each class. Main readings are marked “MR” and suggested readings are marked “SR”. Handouts are marked “H” (they can be found at the back of the course pack). Note the homework due dates.

1. (W 9/4) Financial Instruments. Course overview; financial instruments.

MR: Syllabus; BKM 1.1-4. SR: BKM 1.5-7, 2.

2. (M 9/9) Financial Markets. Financial Markets.

MR: BKM 3.1-4, 3.7, 3.9. SR: BKM 3.5, 3.6, 3.8, 3.10.

3. (W 9/11) Performance of Securities. Present and future value, annuities, perpetuities.

MR: RWJ 4, 5.1-2; H 1-2.

4. (M 9/16) Performance of Securities. Compounding and measuring returns.

MR: RWJ 5.3-4; BKM 5.1-2, 5.4; H 3-5. SR: BKM 5.3.

5. (W 9/18) Portfolio Choice. Portfolio choice and portfolio returns; Efficient portfolios with two risky securities.

MR: H 6-9; BKM 5.5, 6.1-2.

6. (M 9/23) Portfolio Choice. Efficient portfolios with two risky securities; Optimal portfolios and investor preferences.

MR: BKM 5.2, 6.1-2; H 9.

**Homework 1 due in class.**

7. (W 9/25) Portfolio Choice. Efficient and optimal portfolios with a riskless asset.

MR: BKM 5.5-6, 6.3-4.

8. (M 9/30) Portfolio Choice. Efficient and optimal portfolios with multiple risky assets; Introduction to the Capital Asset Pricing Model.  
MR: BKM 6.4-5, 7.1; H 10-11. SR: BKM 6.6.
9. (W 10/2) The CAPM. The Capital Asset Pricing Model.  
MR: BKM 7.1-2; H 12. SR: BKM 6.6.
10. (M 10/7) The CAPM. Applications of the CAPM.  
MR: BKM 7.4; H 13-14. SR: BKM 7.3.
11. (W 10/9) The CAPM. Beyond the CAPM.  
MR: BKM 7.5; H 13-14.  
**Homework 2 due in class.**
12. (W 10/16) Market Efficiency. Return anomalies and market efficiency.  
MR: BKM 8. SR: BKM 9.
13. (M 10/21) Review. Midterm review.
14. (W 10/23) Midterm. Midterm exam.
15. (M 10/28) Equity Valuation. Dividend discount models and valuation ratios; Midterm evaluation.  
MR: BKM 13.1-4; H 15-16. SR: BKM 13.5-6.
16. (W 10/30) Equity Valuation. Dividend discount models and valuation ratios.  
MR: BKM 13.1-4; H 15-16. SR: BKM 13.5-6.



17. (M 11/4) Arbitrage. Arbitrage and the Law of One Price.  
MR: H 17.
18. (W 11/6) Fixed Income Securities. Bond prices and yields.  
MR: BKM 10.1-4, H 18-19. SR: BKM 10.5.
19. (M 11/11) Fixed Income Securities. Bond returns, forward rates, and the yield curve.  
MR: BKM 10.6, H 20-22.
20. (W 11/13) Fixed Income Securities. The yield curve; Duration.  
MR: BKM 11.1-3; H 23-24. SR: BKM 11.4.
21. (M 11/18) Fixed Income Securities. Duration and immunization.  
MR: BKM 11.1-3; H 23-24. SR: BKM 11.4.  
**Homework 3 due in class.**
22. (W 11/20) Options. Option basics and strategies.  
MR: BKM 15.1-2; H 25-26.
23. (M 11/25) Options. Option strategies and arbitrage bounds.  
MR: BKM 15.2, 16.1; H 26-27. SR: BKM 15.3-4.
24. (W 11/27) Options. The Black-Scholes-Merton option pricing formula.  
MR: BKM 16.2-4. SR: BKM 16.5.
25. (M 12/2) Options and futures. Futures.  
MR: BKM 17.1, 17.3-5; H 28. SR: BKM 17.2.

26. (W 12/4) Futures. Futures and swaps.

MR: BKM 17.5-6.

**Homework 4 due in class.**

27. (M 12/9) Investment management. Mutual funds and hedge funds.

SR: BKM 4, 18

27. (M 12/11) Review. Final review.

\* (M 12/16 and W 12/18) Final. Final exam (see page 1).