

# Foundations of Finance

Fall 2016

FINC-UB.0002.05

FINC-UB.0002.06

## 1. Instructors

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Office hours as announced in class

**Teaching Assistants:** The TFs for this class will be announced in class and on NYU Classes. Times and location of office hours will be posted on the course website and announced in class. There will be 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).

## 2. Class Time

The class meets twice a week on Tuesday (T) and Thursday (R). There are three sections meeting at the following times

- FINC-UB.0002.05: 9:30–10:45am
- FINC-UB.0002.06: 11:00am–12:15pm

The first class is on Tuesday 9/6 and the last class is on Thursday 12/15. There are no class on Thanksgiving Day and on December 13. The classroom is Tisch UC25 for all sections.

**Classroom civility:** Respect your classmates. Each lecture starts and ends on time. We understand your busy schedules, but 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 final grade.

### 3. Examination Times

The problem sets are due on

- Problem set 1 due: Tuesday, 9/20
- Problem set 2 due: Thursday, 10/13
- Problem set 3 due: Thursday, 11/10
- Problem set 4 due: Tuesday, 12/6

There will be 4 in class exams on the following days:

- |        |  |                |
|--------|--|----------------|
| Exam 1 | Financial Instruments and security performance | Thursday, 9/22 |
| Exam 2 | PF Choice and CAPM                             | Tuesday, 10/18 |
| Exam 3 | Equity Valuation and Fixed Income              | Tuesday, 11/15 |
| Exam 4 | Options  | Thursday, 12/8 |

### 4. Reading materials

The main class material is in the course pack that we will hand out in two parts. The material for Module 1 will be handed out in the first class; the material for Module 2 will be handed out prior to the beginning of this module. The combined course pack contains all PowerPoint slides that we 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, but recent edition of BKM you are fine, there are only minor changes between recent editions. However, page and chapter numbers may vary. If you use an older edition, it is your responsibility to find out the differences with the latest 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.)

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, we recommend purchasing them.

## 5. 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.

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. We have also included some slides in the course pack on how to work with the calculator. 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).

Every student of Stern is expected to be comfortable with EXCEL tools. In particular, any Finance Area major is expected to have knowledge of these tools that extends beyond familiarity to an individual awareness of the uses and limitations of this technology.

## 6. Communication

The class website is on NYU Classes. 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 we will participate on a regular basis to answer your questions. You are encouraged to answer each others' questions. If you have a question, try the discussion board; chances are the question has been answered there already.

## 7. Exams, Assignments, and Grades

Grades will be based on the four in-class exams (75%), the four problem sets (20%) and participation (5%). The participation grade will be based on class participation and participation in the concept questions (see below).

At NYU Stern, we want to ensure fair and consistent grading across our core courses. As such, grades for this course will be distributed following the Stern Grading guidelines for Core Courses at the Undergraduate College:

25–35% of students can expect to receive As for excellent work;

50–70% of students can expect to receive Bs for good or very good work;

5–15% of students can expect to receive Cs or less for adequate or below work.

**Academic Integrity:** You are responsible for adhering to the NYU Stern Student Code of Conduct, which mandates zero tolerance for cheating and plagiarism. 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 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.

**Exams:** The exams test your understanding of the key concepts in the class. They do not test your ability to memorize or to use your calculator. Rather, they probe your deeper understanding of the material. 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 exams will focus on the material covered since the prior exam. However, *you are expected to know all prior material and use it in light of the new material learned.*

You will be allowed one sheet of notes for each exam topic. 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 are not allowed to take the exam questions home, and no written answers will be provided. Once graded, you are allowed to come visit your exams in my office during office hours. If you have to miss an exam, you will generally be required to make it up later.

**Concept Questions:** After every class, concept questions are posted on the course 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. We will re-post the concept questions as the midterm and final exams approach.

The concept questions are good preparation for the exam and a useful tool for keeping up

with the material. Whether or not you take them (but not how you score) will also be factored into your participation grade.

**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.

Late problem sets are not accepted. You are encouraged to work in groups on the problems, but you must hand in your own copy 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 course 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 your solution manual [2]. The solutions to the questions in the RWJ booklet are included in your course material from the bookstore. Solving lots of practice problems is key in this class.

**Study Groups:** We highly recommend that you form study groups and regularly review the class material in your group. Groups of about 4 students tend to work best. 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 and to note the names of other students you worked with.

## 8. Course Content and Class Schedule

**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.

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.

**Prerequisites:** It is necessary for this class to be comfortable with statistics, calculus, and microeconomics. You are strongly encouraged to study the review handout on statistics at the beginning of the semester (handout H0 located at the end of the course pack). 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 end of your course pack). Note the homework due dates.

1. (Tuesday 9/6) Financial Instruments. Course overview; financial instruments.  
MR: Syllabus; BKM 1.1-4. SR: BKM 1.5-1.7, Chapter 2.
2. (Thursday 9/8) Financial Markets. Financial Markets.  
MR: BKM 3.1-3, 3.5, 3.7. SR: BKM 3.4, 3.6, 3.8, 3.9.
3. (Tuesday 9/13) Performance of Securities. Present and future value, annuities, perpetuities.  
MR: RWJ 4, 5.1-2; H 1-2.
4. (Thursday 9/15) Performance of Securities. Compounding and measuring returns.  
MR: RWJ 5.3-4; BKM 5.1-2, 5.4; H 3-7. SR: BKM 5.3.
5. (Tuesday 9/20) Portfolio Choice. Portfolio choice and portfolio returns; Efficient portfolios with two risky securities.  
MR: H 8-11, Statistics Review; BKM 5.5, 6.1-2.  
**Homework 1 due in class.**
6. (Thursday 9/22) Test. Financial instruments and security performance.
7. (Tuesday 9/27) Portfolio Choice. Efficient portfolios with two risky securities; Optimal portfolios and investor preferences.  
MR: BKM 5.2, 6.1-2; H 11.
8. (Thursday 9/29) Portfolio Choice. Efficient and optimal portfolios with a riskless asset.  
MR: BKM 5.5-6, 6.3-4.

9. (Tuesday 10/4) 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 12-13. SR: BKM 6.6.
10. (Thursday 10/6) The CAPM. The Capital Asset Pricing Model.  
MR: BKM 7.1-2; H 14. SR: BKM 6.6.
11. (Tuesday 10/11) The CAPM. Applications of the CAPM.  
MR: BKM 7.4; H 6,7. SR: BKM 7.3.
12. (Thursday 10/13) Market Efficiency and Beyond the CAPM.  
MR: BKM 8. SR: BKM 9.  
MR: BKM 7.4-5; H 13-14.  
**Homework 2 due in class.**
13. (Tuesday 10/18) Test. PF Choice and the CAPM.
14. (Thursday 10/20) Arbitrage. Arbitrage and the Law of One Price.  
MR: H 17.
15. (Tuesday 10/25) Equity Valuation. Dividend discount models and valuation ratios.  
MR: BKM 13.1-4; H 15-16. SR: BKM 13.5-6.
16. (Thursday 10/27) Equity Valuation. Dividend discount models and valuation ratios.  
MR: BKM 13.1-4; H 15-16. SR: BKM 13.5-6.
17. (Tuesday 11/1) Fixed Income Securities. Bond prices and yields.  
MR: BKM 10.1-4, H 18-19. SR: BKM 10.5.

18. (Thursday 11/3) Fixed Income Securities. Bond returns, forward rates, and the yield curve.

MR: BKM 10.6, H 20-22.

19. (Tuesday 11/8) Fixed Income Securities. The yield curve; Duration.

MR: BKM 10.6, 11.1-3; H 23-24. SR: BKM 11.4.

20. (Thursday 11/10) Fixed Income Securities. Duration and immunization.

MR: BKM 11.1-3; H 23-24. SR: BKM 11.4.

**Homework 3 due in class.**

21. (Tuesday 11/15) Test. Equity valuation and fixed income.

22. (Thursday 11/17) Options. Option basics and strategies.

MR: BKM 15.1-2; H 25-26.

23. (Tuesday 11/12) Options. Practice class.

\* (Thursday 11/24) Thanksgiving Day. No class.

24. (Tuesday 11/29) Options. Option strategies and arbitrage bounds.

MR: BKM 15.2, 16.1; H 26-27. SR: BKM 15.3-4.

25. (Thursday 12/1) Options. The Black-Scholes-Merton option pricing formula.

MR: BKM 16.1-4. SR: BKM 16.5.

26. (Tuesday 12/6) Options. Futures.

MR: BKM 17.1, 17.3-5; H 28. SR: BKM 17.2.

**Homework 4 due in class.**

27. (Thursday 12/8) Test. Options.

\* (Tuesday 12/13) No class.

28. (Thursday 12/15) Futures. Futures and swaps.

MR: BKM 17.5-6.