

SLOAN SCHOOL OF MANAGEMENT  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Eben Lazarus

Spring 2022

**15.401 Managerial Finance, Sections A&B**

Syllabus: Updated May 2, 2022

This course covers the fundamentals of modern financial analysis. The course is organized around three themes: (i) valuing an asset, project, or firm, (ii) raising capital, and (iii) managing risk. Topics include personal, firm, and social investment decisions, financing new ventures, risk analysis, and an introduction to security analysis and asset management. This course is a prerequisite for all other electives offered by the Finance Group.

**Registration**

Sections A and B are intended for **MIT undergraduates, non-MBA graduate students, and cross-registered students**. Sloan MBA students should register for Section C or D if possible. Registration for Sections A and B is through WebSIS and does not use the Sloan bidding process. Students who enroll in 15.417 attend 15.401 lectures and complete all 15.401 assignments, as well as an additional lab component taught by Paul Mende.

**If you're having any issues with registration, please get in touch with course administrative assistant Ahmed Abusharkh ([ahmedabu@mit.edu](mailto:ahmedabu@mit.edu)).**

**Class Schedule**

Each section meets for lecture twice weekly:

- Section A: Tuesday/Thursday, 1:00–2:30PM, E51-145.
- Section B: Tuesday/Thursday, 2:30–4:00PM, E51-145.

All class meetings begin five minutes after and end five minutes before the listed times.

**TAs: Recitations and Office Hours**

The TAs will hold weekly recitations to review class material and cover additional applications and exercises:

- Section A: Friday, 10:00–11:00AM, on Zoom (<https://mit.zoom.us/j/93549111278>).  
TA: Anna Maria Gil, [amgil@mit.edu](mailto:amgil@mit.edu).
- Section B: Wednesday, 12:00–1:00PM, E51-151 (in person).  
TA: Andres Jarpa, [ajarpa@mit.edu](mailto:ajarpa@mit.edu).

You can attend either recitation regardless of your enrollment, and note that they may at some point be consolidated. **The TAs will also hold weekly office hours on Zoom (<https://mit.zoom.us/j/91872082184>), Mondays 11:30AM – 1:00PM, or by appointment.**

## Course Website

Course Canvas site: <https://canvas.mit.edu/courses/14590>.

All teaching materials, problem sets, lecture questions, and course announcements will be posted on the Canvas site. For case materials, see the sidebar labeled Study.Net Materials. We will regularly update your course grades on Canvas so you can see where you stand, and at mid-semester we will post your participation grades for the first half of the class along with your midterm grades.

## Administrative Assistant

Ahmed Abusharkh: E62-311B, (617) 253-5703, [ahmedabu@mit.edu](mailto:ahmedabu@mit.edu).

## My Office Hours

Friday, 1:00–2:30PM, or by appointment ([elazarus@mit.edu](mailto:elazarus@mit.edu)). You can either come to my office (E62-633) or meet with me on Zoom (<https://mit.zoom.us/j/94765097292>). If you'd like to meet via Zoom, send me an email when you're ready to meet. For students in 15.417, I'll set aside some time after class every Thursday (at 4 PM), and I'll be just outside the lecture room. Please let me know in advance if you'd like to meet during this time.

## COVID Protocols

If you're not feeling well or if you've tested positive for COVID, do not come to class. Please let me and the TAs know you'll be missing lecture, and you'll be given access to a lecture recording on the course Canvas site. These lecture recordings will not in general be made available: other than for excused absences, the class is fully in-person, as required by MIT. Students will not be penalized for missing class when feeling unwell, and if sickness interferes with your ability to complete any of the course assignments, please let us know and we'll come up with an alternative due date or way to make up the missed assignment.

Masks are required at all times for all course participants, including the teaching staff (*updated: no longer the case!*). Eating is not allowed in the classroom.

MIT may change its policies as circumstances evolve, and I encourage you to refer to MIT Now (<https://now.mit.edu>) to keep up to date on COVID-related information from the university. We know this is a stressful time, with campus life even more complicated than usual, so please let me or the TAs know if you have any COVID-related concerns or questions at any point.

## Course Requirements and Grading

Course requirements include regular attendance and participation in class, short lecture questions, three problem sets, three case write-ups, and the midterm and final exams. The following weights will be used to determine each student's overall course grade:

15%	Class participation
25%	Short lecture questions, problem sets, and case study write-ups
20%	Midterm exam
40%	Final exam

Your lowest-scoring problem set and case study write-up will each enter the final grade with one-half the weight of the other two. This means, e.g., your problem set grade weights are {40%, 40%, 20%}, with 20% weight on the lowest score. Similarly, your three lowest lecture question scores will each enter your final grade with one-half the normal weight.

The **open-book** in-class midterm exam will be held on **Tuesday, April 5**, and the open-book three-hour final exam will be held sometime during the final exam period (May 13 and 16–18). I'll announce the exact date and time when released by the registrar, which usually happens the third week of the semester.

## Class Participation

Course participation grades will depend on student attendance and engagement during lectures. Attendance will be kept by the TAs, and the TAs will also keep (rough) track of participation in class. Deeper conceptual questions and comments will be particularly rewarded, but please don't hesitate to interrupt me with clarifying questions as well.

I understand that you have lives outside of class, but **unless you have an approved accommodation (see below), I will enforce that you not use phones, tablets, or laptops during class. I'll distribute lecture slides at the beginning of class with the goal of making it easier to follow along without the use of a computer.**

## Lecture Questions, Problem Sets, and Cases

You may work on lecture questions, problem sets, and cases in groups of up to **two people**. Late assignments will not be accepted.

- Lecture questions (e.g., LQ 1.1) will be posted before each class and administered online, to be submitted on Canvas by **10:00PM on Thursdays and Saturdays**. You are encouraged to do them as soon as you finish the lecture. Most lecture questions will be short review problems. From time to time, I may instead assign a "news response" lecture question, asking you to read a short recent news item related to a concept we've covered in lecture and submit a short (no more than four sentences) critical response to a question I assign along with the story.

- There will be three assigned problem sets (e.g., PS 1) emphasizing practical implementations of course concepts. Problem sets are similar to exam questions, with the exception that problem sets may contain questions requiring Excel. The problem sets are typically due at **10:00PM on Sundays** via Canvas.
- There will be three assigned case study write-ups, each due at the start of class before we discuss the case. Each student should submit their own copy of the case-study write-up on Canvas before class begins. If you work with a partner, you can both submit the same write-up, but please note who you worked with on your write-up. Case materials can be accessed on Canvas, in the sidebar labeled Study.Net Materials. I'll give further guidance on the form of the case write-ups before the first one is due.

## Exams

- The midterm and final exams will test your understanding of the key class concepts. They do not test your ability to memorize or to use your calculator; instead, they probe your deeper understanding of the material. To prepare for these exams, you should review the slides together with your own class notes, the required readings, the problem sets, and the sample exams. The final exam is cumulative.
- Exams are open book, but no laptops, smartphones, tables, etc. are allowed unless necessary as an approved accommodation. Aside from this, there are no restrictions on the notes you may bring to the exam. We recommend reviewing the course material in detail before the exam, as you will not generally have time to comb through all your lecture notes to find the relevant material for the exam questions.
- You must bring a dedicated calculator to the exam. Any scientific or graphing calculator is acceptable.
- Students can request to see their graded final exams after the end of the semester.

## Additional Readings

We'll sometimes post additional readings on the course Canvas site to complement the material covered in lecture. These readings will generally be optional, aside from the news response readings (see detail under Lecture Questions, Problem Sets, and Cases above). We also encourage you to follow financial and macroeconomic news; MIT Libraries provide free access to the *Wall Street Journal* and *New York Times*, among others.

In addition to the above resources, you may want to consult the following textbooks for more information on the course material:

1. **Recommended Textbook:** R. Brealey, S. Myers, and F. Allen, *Principles of Corporate Finance*, 12<sup>th</sup> or 13<sup>th</sup> edition.

2. Z. Bodie, A. Kane, and A. Marcus, *Investments*, 10<sup>th</sup> or 11<sup>th</sup> edition.
  - Bodie, Kane, and Marcus focus exclusively on capital markets. They provide a more thorough analysis of investments than Brealey, Myers, and Allen.
3. B. Malkiel, *A Random Walk Down Wall Street*, 2019.
  - A good introduction to some basic ideas in investing.
4. D. Graeber, *Debt: The First 5,000 Years*, 2014.
  - An entertaining alternative historical account of financial markets.

The above textbooks are available on reserve at the Dewey Library, E53-100. The course materials are meant to be self-contained, so the textbooks are not required. But they often provide useful details or alternative explanations for concepts covered in class, and can be a useful reference for any material you're finding challenging or would like to know more about.

## Course Values, Environment, and Accommodations

You are responsible for upholding Sloan's code of conduct, which mandates zero tolerance for cheating and plagiarism. For more details on Sloan's academic policies, please read the document "Classroom Expectations," which is available on the course site.

Just as you're required to follow the course requirements and code of conduct, I'm responsible for ensuring a healthy and supportive class environment. If you're facing any difficulties, either inside or outside the classroom, please feel free to speak to me, or contact [Student Support Services](#) (617-253-4861) or [Student Mental Health & Counseling](#) (617-253-2916 during business hours, 617-253-4481 otherwise).

Please let me know if you need (or think you might need) any disability-related accommodations (and if you haven't done so, I encourage you to contact [Student Disability Services](#) at [uaap-sds@mit.edu](mailto:uaap-sds@mit.edu) as well). And if you would like me to address you with a different name or pronouns than those provided to me by MIT, please get in touch. If you feel I'm falling short on upholding my responsibilities to you in any way, please don't hesitate to let me know.

## Course Schedule

This is an approximate schedule for the course; some material may take more or less time to cover than allotted below. The lecture questions are numbered so that, e.g., LQ 4.2 means Unit 4, Lecture Question 2. **Note that the schedule lists only the Friday (Section A) recitation dates every week to streamline the schedule, but Section B recitations are on Wednesday every week.**

Session	Date	Day	Topic	Assignment
1	2/1	T	Introduction	
2	2/3	Th	Net Present Value 1	LQ 1.1 (Due 2/5)
	2/4	F	<i>No Recitation (First Week)</i>	
3	2/8	T	Net Present Value 2	LQ 1.2 (Due 2/10)
4	2/10	Th	Capital Budgeting 1	<del>LQ 2.1 (Due 2/12)</del>
	2/11	F	Recitation: Net Present Value	PS 1 (Due 2/13)
5	2/15	T	Capital Budgeting 2	LQ 2.2 (Due 2/17)
6	2/17	Th	Stocks	LQ 3.1 (Due 2/20)
	2/18	F	Recitation: Capital Budgeting	
	2/22	T	<i>No Class (Monday Schedule)</i>	
7	2/24	Th	Case: Tottenham Hotspur	Case 1 (Due in Class)
	2/25	F	Recitation: Stocks	
8	3/1	T	Bonds 1	LQ 4.1 (Due 3/3)
9	3/3	Th	Bonds 2	LQ 4.2 (Due 3/5)
	3/4	F	Recitation: Bonds	
10	3/8	T	Capital Structure 1	
11	3/10	Th	Capital Structure 2 (& OVERFLOW)	LQ 5.1 (Due 3/17)
	3/11	F	Recitation: Capital Structure	PS 2 (Due 3/13)
	3/15	T	<i>No Class (SIP Week)</i>	
	3/17	Th	<i>No Class (SIP Week)</i>	
	3/18	F	<i>No Recitation (SIP Week)</i>	
	3/22	T	<i>No Class (Spring Break)</i>	
	3/24	Th	<i>No Class (Spring Break)</i>	
	3/25	F	<i>No Recitation (Spring Break)</i>	

Session	Date	Day	Topic	Assignment
12	3/29	T	Financing a Startup	LQ 6.1 (Due 3/31)
13	3/31	Th	Midterm Review	
	4/1	F	Recitation: Midterm Review	
14	4/5	T	<b>In-Class Midterm Exam</b>	
15	4/7	Th	Diversification 1	LQ 7.1 (Due 4/9)
	4/8	F	Recitation: Midterm Wrap-Up, Startups	
16	4/12	T	Diversification 2	LQ 7.2 (Due 4/14)
17	4/14	Th	Case: Strava	Case 2 (Due 4/19)
	4/15	F	Recitation: Diversification	
18	4/19	T	Risk and Return 1	<del>LQ 8.1 (Due 4/21)</del>
19	4/21	Th	Risk and Return 2	<del>LQ 8.2 (Due 4/23)</del>
	4/22	F	Recitation: Risk and Return	PS 3 (Due 4/24)
20	4/26	T	Options 1	LQ 9.1 (Due 4/28)
21	4/28	Th	Options 2	LQ 9.2 (Due 5/1)
	4/29	F	Recitation: Options	
22	5/3	T	Options Wrap-Up & Empirical Finance	
23	5/5	Th	Case: Cost of Capital at Ameritrade	Case 3 (Due in Class)
	5/6	F	Recitation: Final Review	
24	5/10	T	Final Review	

*LQs rolled into PS 3*

**The open-book final exam will be held Tuesday, May 17, 9:00AM–12:00PM, on the third floor of Building E51 (specific classroom assignments to be announced).**

## Course Outline

Chapters listed below refer to the main course textbook: Brealey, Myers and Allen (12<sup>th</sup> or 13<sup>th</sup> edition).

### Introduction

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Introduction to Finance and Course Overview (1) Chap. 1

- Big picture: finance from the user's perspective (households, businesses, financial markets and institutions).
- Fundamental principles of finance: money today vs. tomorrow, risk aversion, absence of arbitrage, incentives for crowdsourcing and collaboration.

### Part A. Valuing an Asset, a Project, or a Company

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Net Present Value (2 – 3) Chap. 2

- Present value vs. future value, annuities, perpetuities.
- Applications to mortgages, refinancing, basic financial projections for business plans.
- Real vs. nominal cash flows.

Capital Budgeting (4 – 5) Chap. 5, 6

- NPV rule, cash flow, calculations, discount rates.
- Alternatives to NPV: payback period, IRR.

Case: Tottenham Hotspur (7)

## Part B. Raising Capital

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Stocks (6)

Chap. 4

- Equity markets.
- Discounted Cash Flow (DCF) method applied to stock valuation.

Bonds (8 – 9)

Chap. 3, 23, 24

- Fixed-income markets.
- Term structure of interest rates.
- Properties of bond prices and market conventions.

Capital Structure (10 – 11)

Chap. 17

- Weighted average cost of capital.

Financing a Start-Up (12)

Chap. 15

Case: Strava (17)

Midterm Review (13)

**Midterm Exam (in class, open book). Date: Apr. 5.**

## Part C. Managing Risk

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Diversification (15 – 16)

Chap. 7

- Systematic and idiosyncratic risks.
- Portfolio optimization.

Risk and Return (18 – 19)

Chap. 8

- Applications of the CAPM.
- Empirical evidence and extensions of the CAPM.

Options (20 – 21)

Chap. 20, 21, 22

- Basic properties of options: payoff diagrams, Black-Sholes formula, binomial option pricing.
- Real options.

Case: The Cost of Capital at Ameritrade (22)

Empirical Finance & Other Topics (23)

## Conclusion

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Final Review (24)

- Open topics for next courses: optimal capital structure, the price of risk, the cost of derivatives, portfolio management.

**Final Exam (open book). Date: May 17.**