SLOAN SCHOOL OF MANAGEMENT
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Eben Lazarus   Spring 2019

15.401 Managerial Finance, Sections A&B

Syllabus: April 29, 2019

This course covers the fundamentals of modern financial analysis. The course is orga-
nized around three themes: (i) valuing an asset or a company, (ii) raising capital, and
(iii) managing risk. Topics include personal and corporate investment decisions, startup
financing, risk analysis, and an introduction to security analysis and asset management.
This course is a prerequisite for all other finance 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 enrolled in 15.417 attend 15.401 lectures and complete
all 15.401 assignments, as well as an additional lab component.

Class Schedule

Each section meets for lecture twice weekly:

- Section A: Tuesday/Thursday, 1:00 – 2:30PM, E25-111.

- Section B: Tuesday/Thursday, 2:30 – 4:00PM, E25-111.

TAs: Recitations and Office Hours

The TAs will hold weekly recitations to review class material and cover additional appli-
cations and exercises:

- Section A: Wednesday, 12:00 – 1:00PM, E51-151.
  TA: Jarrod Pierce, jtpierce@mit.edu.
  TA Office Hours: Thursday, 4:00 – 5:00PM, E51-242.

- Section B: Friday, 10:00 – 11:00AM, E51-345.
  TA: Alex Fernández del Castillo, alexfc@mit.edu.
  TA Office Hours: Monday, 10:00AM – 12:00PM, E51-242.

Websites

Course site (Canvas): https://canvas.mit.edu/courses/978

- All teaching materials and course announcements will be posted on the Canvas site. For case materials, see the sidebar labeled Study.Net Materials.

MITx site: https://lms.mitx.mit.edu/courses/course-v1:MITx+15.401r_8+2019_Spring/

- Short questions and problem sets (and their solutions) will be posted on the MITx site; they will not be distributed in paper form in class.

My Office Hours

Monday, 1:00 – 2:30PM, E62-633, or by appointment (elazarus@mit.edu).

Administrative Assistant

Robert Kissinger: E62-671, (617) 253-7006, rkissing@mit.edu.

Course Requirements and Grading

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

5%	Class participation
25%	Short lecture questions, problem sets, and case study write-ups
25%	Midterm exam
45%	Final exam

Your lowest-scoring problem set and case study write-up will each enter the final grade with one-third the weight of the other three. This means, e.g., your problem set grade weights are {30%, 30%, 30%, 10%}, with 10% weight on the lowest score. Similarly, your three lowest lecture question scores will each enter your final grade with one-third the normal weight.

The closed-book in-class midterm exam will be held on **April 9**, and the closed-book final exam will be held **Tuesday, May 21, 9AM–12PM, E51, third floor (rooms 315, 325, 335, 345, and 376)**.

Class Participation

Course participation grades will depend on student attendance (mandatory) and engagement during lectures. Deeper conceptual questions and comments will be particularly rewarded, but please don't hesitate to interrupt me with simple clarifying questions as

well. I understand that you have lives outside of class, but please try to minimize use of laptops and phones. 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

- Lecture questions (e.g., LQ 1.1) will be posted before each class and administered online, to be turned in on MITx by **10:00PM on Thursdays and Saturdays**. You are encouraged to do them as soon as you finish the lecture.

- There will be four 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 graded on a 4-point scale, and are typically due at **10:00PM on Sundays** via MITx (with the exception of PS 4, as in the schedule below). Problem sets should be solved individually.

- There will be four assigned case study write-ups, each due at the start of class before we discuss the case. You may form a team of up to three students to analyze the case; please turn in a single hard copy in class with the names of all collaborators. Case write-ups are graded on a 3-point scale ($\checkmark$-, $\checkmark$, $\checkmark$+). Case materials can be accessed on the Canvas site, 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.

- **Late assignments will not be accepted**. For technical reasons, the due date listed on the MITx website may be later than the due date in the syllabus. In this case, assignments are due at **10:00PM on the syllabus date**, not the MITx date.

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, the sample exams, and preferably the suggested readings. The final exam is cumulative.

- You will be allowed one double-sided page of notes at the midterm exam and two double-sided pages of notes at the final exam. The sheets must be no larger than 8.5×11. There are no restrictions on the contents, other than that they have to be readable with the naked eye.

- No laptops, smartphones, tablets, etc. are allowed during the exam, even for use as calculators. 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 (Optional)

We'll regularly post additional readings on the course Canvas site, providing alternative perspectives on the major themes of the course. In addition to those readings, you may want to consult the following textbooks for more information on the course material (all of which are available on reserve at the Dewey Library, E53-100):

1. **Recommended Textbook:** R. Brealey, S. Myers, and F. Allen, *Principles of Corporate Finance*, 11th or 12th edition.

2. Z. Bodie, A. Kane, and A. Marcus, *Investments*, 10th or 11th 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.

   - This best-selling introduction to investing is now in its 12th edition and is a great way to ease into financial markets.

4. P. Bernstein, *Capital Ideas*, 2005.

   - This is a well-written account of some of the foundational ideas in academic finance, many of which were developed at MIT in the 1960s and 1970s.

5. D. Graeber, *Debt: The First 5,000 Years*, 2014.

   - An alternative historical account of financial markets.

You are also encouraged to follow financial and macroeconomic news (in, for example, the *Financial Times*, the *Wall Street Journal*, and *The Economist*).

Course Values

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` 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 B) recitation dates every week to streamline the schedule, but Section A recitations are on Wednesday every week.**

Session	Date	Day	Topic	Assignment
1	2/5	T	Introduction	
2	2/7	Th	Net Present Value 1	LQ 1.1 (Due 2/9)
	2/8	F	*No Recitation (First Week)*	
3	2/12	T	Net Present Value 2	LQ 1.2 (Due 2/14)
4	2/14	Th	Capital Budgeting 1	LQ 2.1 (Due 2/16)
	2/15	F	Recitation: Net Present Value	PS 1 (Due 2/17)
	2/19	T	*No Class (Monday Schedule)*	
5	2/21	Th	Capital Budgeting 2	LQ 2.2 (Due 2/23)
	2/22	F	Recitation: Capital Budgeting	
6	2/26	T	Case: Tottenham Hotspur	Case 1 (Due in Class)
7	2/28	Th	Stocks	
	3/1	F	Recitation: Stocks	
8	3/5	T	Stocks, *cont.*	LQ 3.1 (Due 3/7)
9	3/7	Th	Bonds 1	LQ 4.1 (Due 3/9)
	3/8	F	Recitation: Bonds	PS 2 (Due 3/17)
10	3/12	T	Bonds 2	LQ 4.2 (Due 3/14)
11	3/14	Th	Capital Structure	LQ 5.1 (Due 3/19)
	3/15	F	Recitation: Capital Structure	
12	3/19	T	Capital Structure, *cont.*	
13	3/21	Th	Case: Buffett's Bid for MG's Newspapers	Case 2 (Due in Class)
	3/22	F	*No Recitation (SIP Week)*	
	3/26	T	*No Class (Spring Break)*	
	3/28	Th	*No Class (Spring Break)*	
	3/29	F	*No Recitation (Spring Break)*	

Session	Date	Day	Topic	Assignment
14	4/2	T	Financing a Start-Up	LQ 6.1 (Due 4/4)
15	4/4	Th	Midterm Review	
	4/5	F	Recitation: Midterm Review	
16	4/9	T	**In-Class Midterm Exam**	
17	4/11	Th	~~Case: Strava~~ Diversification 1	~~Case 3 (Due in Class)~~
	4/12	F	*No Recitation*	
	4/16	T	*No Class (Patriot's Day)*	
18	4/18	Th	Diversification 2	LQ 7.1 (Due 4/20)
	4/19	F	Recitation: Diversification	
19	4/23	T	Diversification 3	LQ 7.2 (Due 4/25)
20	4/25	Th	Risks and Returns 1	LQ 8.1 (Due 4/27)
	4/26	F	Recitation: Diversification; Risks and Returns	PS 3 (Due 4/28)
21	4/30	T	Risks and Returns 2	LQ 8.2 (Due 5/2)
22	5/2	Th	Options 1	LQ 9.1 (Due 5/9)
	5/3	F	Recitation: Risks and Returns	
23	5/7	T	Case: Cost of Capital at Ameritrade	Case 4 (Due in Class)
24	5/9	Th	Options 2	PS 4 (Due 5/10)
	5/10	F	Recitation: Options	
25	5/14	T	Options 3	
26	5/16	Th	Final Review	
	5/17	F	Recitation: Final Review	

The three-hour final exam will be held Tuesday, May 21, 9AM–12PM, E51, third floor (rooms 315, 325, 335, 345, and 376).

Course Outline

Chapters listed below refer to the main course textbook: Brealey, Myers and Allen (11th or 12th edition).

Introduction

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 or a Company

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 (6)

Part B. Raising Capital

Stocks (7 – 8)   Chap. 4

- Equity markets.

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

Bonds (9 – 10)   Chap. 3, 23, 24

- Fixed-income markets.

- Term structure of interest rates.

- Properties of bond prices and market conventions.

Capital Structure (11 – 12)   Chap. 17

- Weighted average cost of capital.

Case: Buffett's Bid for Media General's Newspapers (13)

Financing a Start-Up (14)   Chap. 15

Midterm Review (15)

Midterm Examination (in class, closed book). Date: Apr. 9.

~~Case: Strava (17)~~

Part C. Managing Risk

Diversification (17 – 19)   Chap. 7

- Systematic and idiosyncratic risks.

- Portfolio optimization.

Risks and Returns (20 – 21)   Chap. 8

- Applications of the CAPM.

- Empirical evidence and extensions of the CAPM.

Case: The Cost of Capital at Ameritrade (23)

Options (22, 24 – 25)   Chap. 20, 21

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

- Counterparty risk.

- Real options.

Conclusion

Final Review (26)   Chap. 13

- The evolving role of finance in non-financial industries.

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

Final Exam (closed book). Date: May 21.