

SLOAN SCHOOL OF MANAGEMENT
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Daniel Greenwald

Spring 2018

15.401 Managerial Finance, Sections A&B

Syllabus: February 5, 2018

This course covers the fundamentals of modern financial analysis that are essential to any manager, entrepreneur, investor, or other business professional. This course is organized around three themes: (i) valuing 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-Sloan graduate students, and cross-registered students. Sloan MBA students should register for Sections C and D. 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

The class meets twice per week.

- Section A: Tuesday/Thursday, 1:00pm - 2:30pm, Room E25-111.
- Section B: Tuesday/Thursday, 2:30pm - 4:00pm, Room E25-111.

TAs and Recitations

The TAs will hold recitations where class material will be reviewed and additional applications and exercises presented.

- Section A: Friday, 11:00am - 12:00pm, Room E51-345.
TA: Enrico Innocenti, einno@mit.edu.
TA Office Hours: Tuesday 2:30pm - 3:30pm, Room E51-242
- Section B: Friday, 10:00am - 11:00am, Room E51-345.
TA: Juhyun Song, mitboy@mit.edu.
TA Office Hours: Tuesday 4:00pm - 5:00pm, Room E51-242

Websites

Course site (Stellar): <https://stellar.mit.edu/S/course/15/sp18/15.401AB/index.html>

MITx site: https://lms.mitx.mit.edu/courses/course-v1:MITx+15.401r_5+2018_Spring/info

All teaching materials, as well as class announcements and TA office hours, will be posted on the Stellar site. For case materials, see the Study.net documents in the Materials page. Short questions and problem sets (and their solutions) will be posted on the MITx website; they will not be distributed in paper form in class.

Office Hours

Daniel Greenwald: Wednesday, 10:30am to 12pm, E62-641, or by appointment, dlg@mit.edu.

Administrative Assistant

Alison Wurtz: E62-671, (617) 258-6494, awurtz@mit.edu.

Course Requirements and Grading

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

5%	Class Participation
25%	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 10**, and the closed-book final exam will be given on an MIT-scheduled date to be determined — **please reserve these dates and schedule your plans accordingly.**

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. 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 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 they have to be readable with the naked eye (no microfiche allowed!).
- 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 their graded final exams after the end of the semester.

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 3-point scale (\checkmark^- , \checkmark , \checkmark^+), and are due at **10:00pm on Sundays** via MITx. Problem sets should be solved individually.
- There will be four assigned case study write-ups. Case write-ups are 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 and create your write-up. You should turn in a single hard copy in class with the names of all collaborators.
- **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.

Course Materials

- **Class notes and recitation notes:** available on the course website. They contain material not found in Brealey, Myers, and Allen, and provide alternate perspectives on the major themes of the course.
- **Problem sets and case assignments:** available on the course website.

Additional Readings (Optional)

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 edition.
 - Bodie, Kane, and Marcus focus exclusively on capital markets. They provide a more rigorous and thorough analysis of investments than Brealey, Myers, and Allen.
3. B. Malkiel, *A Random Walk Down Wall Street*, 2015.

- This best-selling introduction to investing is now in its 11th edition and is as popular as ever because of its entertaining style and sage advice. This is a great way to ease into financial markets, particularly for those who are not financially inclined.

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

- Bernstein was one of the most well-respected and influential practitioners in the financial industry, and the founding editor of the *Journal of Portfolio Management*. This is a lively and beautifully written account of the most important ideas in academic finance, many of which were developed at MIT in the 1960s and 1970s.

Staying Up to Date

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

Sloan 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 Values in Practice” which is available on the course website.

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.

Session	Date	Day	Topic	Assignment
1	2/6	T	Introduction	
2	2/8	Th	Net Present Value 1	LQ 1.1 (Due 2/10)
	2/9	F	Optional Recitation: Excel	
3	2/13	T	Net Present Value 2	LQ 1.2 (Due 2/15)
4	2/15	Th	Capital Budgeting 1	LQ 2.1 (Due 2/17)
	2/16	F	Recitation: Net Present Value	PS 1 (Due 2/18)
	2/20	T	<i>No Class (Monday Schedule)</i>	
5	2/22	Th	Capital Budgeting 2	LQ 2.2 (Due 2/24)
	2/23	F	Recitation: Capital Budgeting	
6	2/27	T	Case: Tottenham Hotspur	Case 1 (Due in Class)
7	3/1	Th	Capital Structure	LQ 3.1 (Due 3/3)
	3/2	F	Recitation: Capital Structure	

Session	Date	Day	Topic	Assignment
8	3/6	T	Bonds 1	LQ 4.1 (Due 3/8)
9	3/8	Th	Bonds 2	LQ 4.2 (Due 3/10)
	3/9	F	Recitation: Bonds	PS 2 (Due 3/11)
10	3/13	T	Stocks	LQ 5.1 (Due 3/15)
11	3/15	Th	Case: Buffett's Bid for MG's Newspapers	Case 2 (Due in Class)
	3/16	F	Recitation: Stocks	
12	3/20	T	Real Estate	
	3/22	Th	<i>No Class (SIP Week)</i>	
	3/23	F	<i>No Recitation (SIP Week)</i>	
	3/27	T	<i>No Class (Spring Break)</i>	
	3/29	Th	<i>No Class (Spring Break)</i>	
	3/30	F	<i>No Recitation (Spring Break)</i>	
13	4/3	T	Financing a Start-Up	LQ 6.1 (Due 4/5)
14	4/5	Th	Midterm Review	
	4/6	F	Recitation: Midterm Review	
15	4/10	T	In-Class Midterm Exam	
16	4/12	Th	Case: Strava	Case 3 (Due in Class)
	4/13	F	<i>No Recitation</i>	
	4/17	T	<i>No Class (Patriot's Day)</i>	
17	4/19	Th	Diversification 1	LQ 7.1 (Due 4/21)
	4/20	F	Recitation: Diversification	
18	4/24	T	Diversification 2	LQ 7.2 (Due 4/26)
19	4/26	Th	Risks and Returns 1	LQ 8.1 (Due 4/28)
	4/27	F	Recitation: Divers./Risks and Returns	PS 3 (Due 4/29)
20	5/1	T	Risks and Returns 2	LQ 8.2 (Due 5/3)
21	5/3	Th	Case: Cost of Capital at Ameritrade	Case 4 (Due in Class)
	5/4	F	Recitation: Risks and Returns	
22	5/8	T	Options 1	LQ 9.1 (Due 5/10)
23	5/10	Th	Options 2	
	5/11	F	Recitation: Options	PS 4 (Due 5/11)

Session	Date	Day	Topic	Assignment
24	5/15	T	Options 3	
25	5/17	Th	Final Review	
	5/18	F	Recitation: Final Review	
	TBD		Final Exam (Time TBD, Closed Book)	

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 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)

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

Part B. Raising Capital

Capital Structure (7)

Chap. 17

- Weighted average cost of capital.

Bonds (8 - 9)

Chap. 3, 23, 24

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

Stocks (10)

Chap. 4

- Equity markets.
- Discounted Cash Flow (DCF) method.

Case: Buffett's Bid for Media General's Newspapers (11)

Real Estate (12 - 13)

Midterm Review (14)

Financing a Start-Up (15)

Chap. 15

Midterm Examination (in class, closed book). Date: Apr 10.

Case: Strava (17)

Part C. Managing Risk

Diversification (18 - 19)	Chap. 7
<ul style="list-style-type: none">• Systematic and idiosyncratic risks.• Portfolio optimization.	
Risks and Returns (20 - 21)	Chap. 8
<ul style="list-style-type: none">• Applications of the CAPM.• Empirical evidence and extensions of the CAPM.	
Case: The Cost of Capital at Ameritrade (22)	
Options (23 - 25)	Chap. 20, 21
<ul style="list-style-type: none">• Basic properties of options: payoff diagrams, Black-Sholes formula, binomial option pricing.• Counterparty risk.• Real options.	

Conclusion

Final Review (26)	Chap. 13
<ul style="list-style-type: none">• 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: TBD