

Venture Capital and the Finance of Innovation

FNCE 750

Spring 2018

Preliminary Version

Be sure to get the final version, which will be distributed before the first day of class.

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Lectures: Tuesday/Thursday,

Section 1: 9-10:20am in JMHH 365

Section 2: 10:30-11:50am in JMHH 365

Section 3: 1:30-2:50pm in Lauder-Fischer Auditorium

Office hours with professor: Mondays, 3:45-5:15pm and by appointment, SHDH 2321

Office hours with TAs: TBD

Course website on Canvas: <https://canvas.upenn.edu/courses/1390327>

PREREQUISITES

FNCE 611 (or 612) and 613 are both prerequisites. FNCE 613 may be taken concurrently with FNCE 750.

SUMMARY

The course covers the finance of technological innovation, with an emphasis on the quantitative methods useful for venture capital investing. This is first and foremost a finance course, so we will not cover the management, strategy, legal, marketing, and other non-financial topics that are also important in VC investing. The primary audience for this course is finance majors interested in careers in venture capital, entrepreneurship, or R&D-intensive companies (e.g., pharma, tech). There are four in-class quizzes and one team project with four deliverables throughout the semester.

GOALS FOR THIS COURSE

The course's goals, from most to least important, are

1. Help students gain a deeper understanding of finance
2. Provide a framework for making investment decisions about high-technology projects
3. Provide students with institutional background, specialized vocabulary, and important facts about the venture capital industry
4. Expose students to several promising new companies

GETTING HELP / TEACHING ASSISTANTS

Our excellent TAs for the semester are Shaistah Bahrainwala, Upadhi Kabra, Mauricio Medeiros, and Jake Silverman. Mauricio is a finance PhD student, the other TAs are 2nd year MBA students.

There are several ways you can get help with questions throughout the semester:

1. Ask me (Luke) in weekly office hours (Mondays, 3:45-5:15pm, SHDH 2321)
2. Ask our TAs in their weekly office hours (TBD)
3. Email us:
 - Luke: luket@wharton.upenn.edu
 - Shaistah: shaistah@wharton.upenn.edu
 - Upadhi: upadhi@wharton.upenn.edu
 - Mauricio: medj@wharton.upenn.edu,
 - Jake: silvj@wharton.upenn.edu

The TAs and I promise replies to emails within 24 hours on weekdays. We cannot promise replies to emails sent less than 24 hours before due dates or quizzes.

HOW DOES THE COURSE COMPARE TO OTHERS?

The course complements several entrepreneurship courses offered in various Wharton departments. The most closely related course is MGMT 804, Venture Capital and Entrepreneurial Management. There will be some overlapping materials in the first half of the course, when we learn the basics of the VC industry, but virtually no overlap in the second half, when we build on the basics.

READINGS

- **Priority:** Each week I'll email you the upcoming week's readings, and I will also tell you the priority of each reading.
- **Primary textbook:** *Venture Capital & the Finance of Innovation (VCFI)* (John Wiley and Sons), available in the bookstore. Make sure you buy the 2nd edition, which has a dark brown cover.
- **Cases:** There will be approximately five cases. Some will be on the course website, some will be on Study.net.
- **Other required readings:** I'll occasionally send you articles from the popular press and academic literature. We'll sometimes discuss them in class, and they may appear on the quizzes.
- **PennDig:** If you find an article you think your classmates or I may like, post it to PennDig on our Canvas site. You can find the PennDig tab on the far left column of our Canvas site. I'll be posting interesting articles I find there, too. Check out and comment on articles your peers have posted. This PennDig board will be a nice way to keep up with industry trends and see more real-world examples. These readings are optional. More on PennDig below.
- **Review questions and solutions:** Details on these below.
- **Solutions to textbook exercises:** Posted on Canvas in folder "Exercises from the textbook."

GRADING

There are three components to the course grade, for a total of 100 points:

- Team project (40 points)
 1. Sourcing the deal (5 points, due Feb. 22)

2. Valuing the company (15 points, due March 15th)
 3. In-class presentation (5 points, April 17, 19, and 24th)
 4. Partial valuation, term sheet, and negotiation strategy (15 points, due April 30th)
- Four in-class quizzes for a total of 40 points. I will drop your lowest score out of the four.
 - Participation (20 points)

A few other notes:

- The **in-class quizzes** will cover lectures, study questions, and readings. They only cover material since the previous quiz, so they're not cumulative. Each quiz will take 30 minutes.
- **No make-up quizzes.** Since I drop your lowest quiz grade, it's no problem to miss one quiz for any reason, including a job interview, broken alarm clock, bad hair day, etc. For that same reason, I will not offer make-up quizzes except in the event of grave illness or family emergency. In that event, contact the MBA program office before the quiz, ask for their guidance, and have the MBA office contact me before the quiz.
- The quizzes and projects may cover **material from outside of lectures.** I do this because we don't have enough time in lecture to cover everything you need to learn, and I have faith in your ability to learn some material on your own. Of course, the TAs and I are here to help you if you get stuck on this additional material.
- Your **participation grade** depends on both the quantity and quality of participation. The grade mainly depends on what you do inside the classroom, but putting high-quality posts and comments on PennDig is one small way to help your participation grade (details above). Using your name card will also help your participation grade, and it will also help you get to know each other.
- I won't post **videos of regular lectures**, except in special circumstances like religious holidays. Please ask me if you'd like to have lecture videotaped during a religious holiday.
- **Re-grade policy:** You have one week from the date on which the assignment or quiz is handed back to submit a written appeal that clearly identifies your section. Please hand the typed appeal to the receptionist in the finance department on the second floor of SHDH. We will then re-grade the entire assignment/quiz, and as a result your score may go up or down. We will not re-grade parts of quizzes written in pencil.
- **Cheating.** By enrolling in this course, you are explicitly agreeing to abide by the Student Code of Conduct. If there is any doubt as to whether or not your actions constitute cheating, please ask me.
- **Cheat sheet.** The quizzes are closed book, although I'll provide a cheat sheet for you on some of the quizzes. You are not allowed to bring your own cheat sheet. Don't worry, you won't have to do much if any rote memorization to prepare for quizzes.

TEAM PROJECT

- The semester-long **team project** integrates the course material and asks you to apply it to a VC investment scenario. Your team will take on the role of VCs evaluating a hypothetical investment in a real company of your choosing. I will give you a detailed description of the project later. Here is an overview of the four deliverables, which are spaced throughout the semester:

- **Sourcing the deal** (5 points): Find a company to analyze and submit a short memo describing the company and investment opportunity. The main requirements are that the company be privately owned (i.e., pre-IPO), less than 10 years old, and in the typical industries VC invest in. Most importantly, your team should choose a company that you're excited to learn about. Unfortunately, data availability will severely limit your choice of company.
- **Total valuation** (15 points): Perform a detailed DCF valuation of the company, including an in-depth analysis of addressable market size.
- **In-class presentation** (5 points): Each team will give a short presentation on the company and your team's valuation in front of the class. These will happen at the end of the semester. If we don't have time for all teams to present during class, I'll ask a few teams to present to me outside of class time, in my office.
- **Partial valuation, term sheet, and negotiation strategy** (15 points). Write a term sheet that describes the terms of the deal, including security type, number of shares, amount invested, and protective covenants. You will also write an internal memo to the senior VC partners describing your negotiation strategy.
- You will be expected to **evaluate and rate other teams' projects**, using Professor Fader's WHOOPPEE system. Your project grade will be based in part on your classmates' evaluations, and also on how well you evaluate your classmates.
- **Teams** should have three or four members. I may allow two or five members if there is a compelling reason (ask me). I want teams to be large for three reasons: this project requires a lot of work, I want every team to have a chance to present in front of the whole class, and I want to provide each team quality feedback. All members of the team will receive the same grade. Switching teams mid-semester is not allowed.
- You can find **examples of successful projects from previous years** on Canvas.

HOW TO GET THE MOST OUT OF THE COURSE

From most to least important:

- Always bring the lecture notes to class, either on paper or a on writable tablet.
- Understand all the content and examples from lectures.
- Do the required readings before each lecture. This is especially true for cases and articles I tell you we'll discuss during class. Take notes on all the required readings, and study those notes before the quizzes. I expect you to remember the main points from the readings, but I don't expect you to memorize details.
- Find good teammates, and put in lots of hours on the group project. Look at the sample projects from last year to see what I'm looking for.
- Do the **review questions**. For most lectures I will post review questions and their solutions (Canvas website → "Review Questions"). These are not turned in or graded. Working on these questions is an excellent way to prepare for the in-class quizzes. I strongly encourage you to work through the questions before consulting the solution. The review questions introduce some material that we did not cover in lecture. I expect you to learn this material on your own. On the bright side, you'll have the solutions, and the TAs and I are here to help if you need it.

FREE LUNCH!

I look forward to taking small groups of students out to lunch. You can sign up for these on Canvas. Here's how: Canvas website → Calendar → Scheduler. I will post an announcement on Canvas each time I schedule a new lunch. Feel free to sign up for multiple lunches. However, to make sure all students have a chance to join a lunch, if you have already been to one lunch then please wait until the day before to sign up for subsequent lunches.

COURSE SCHEDULE, TOPICS, AND READINGS

The schedule below is approximate, except for quiz and guest-speaker dates. Some topics will take longer than one lecture, others shorter. Every week I'll send you an email describing exactly how to prepare for the following week.

Note that the guest lectures on **Jan. 30** and **Mar. 20** happen outside scheduled class time. The reason is that I teach multiple sections, and this guest was not available to speak multiple times. I realize this means some students will unfortunately have to miss this guest speaker because of schedule conflicts with other classes. Of course, if you don't have such a conflict, I expect you to be there. I'm sorry if you have to miss this guest speaker. It won't be covered on the quizzes.

In the schedule below, VCFI refers to the course textbook, *Venture Capital and the Finance of Innovation*. I will post additional required readings throughout the semester.

Date	Topic	Readings	Quizzes
Jan. 11	Introduction	Syllabus	
Jan. 16	The VC industry	VCFI Ch. 1	
Jan. 18	Structure of VC firms and funds	VCFI Ch. 2., Accel VII case	
Jan. 23	VC fund performance	VCFI Ch. 3	
Jan. 25	The risk-reward tradeoff in VC	VCFI Ch. 7.1, 4	
Jan. 30	Guest speaker: Erik Hirsch from Hamilton Lane, 4:30-5:50pm, Location TBD		
Feb. 1	VC investment process and due diligence	VCFI Ch. 7.2, Sunrun case	Quiz #1
Feb. 6	Term sheets	VCFI Ch. 8, Sunrun case	
Feb. 8	Preferred stock	VCFI 9.1	
Feb. 13	Dilution and anti-dilution protection	VCFI 9.2	
Feb. 15	Buffer for spillover		
Feb. 20	Evaluating high-growth opportunities	VCFI Ch. 10	
Feb. 22	An analysis of Atricure		Quiz #2
Feb. 27	Valuation by DCF	<i>Valuation</i> Chapter 32	
Mar. 1	Valuation using multiples	VCFI Ch. 12	
Mar. 13	Options in VC	VCFI Ch. 13, 16.1	
Mar. 15	Guest speaker: Vas Natarajan from Accel Partners, normal class time and location		
Mar. 20	Guest speaker: Josh Kopelman from First Round Capital, 4:30-5:50pm, location TBD		
Mar. 22	Valuing preferred stock: Series A	VCFI Ch. 14	Quiz #3
Mar. 27	Valuing preferred stock: Later rounds	VCFI Ch. 15, 17	
Mar. 29	Guest speaker: Jason Rhodes from Atlas Venture, normal class time and location		
Apr. 3	Buffer for spillover		
Apr. 5	Square Inc.: Financing a Unicorn	Square case	
Apr. 10	Angel financing structures		
Apr. 12	IPOs		
Apr. 17	Team presentations		
Apr. 19	Team presentations + last quiz		Quiz #4
Apr. 24	Team presentations + future of VC		