

Venture Capital & the Finance of Innovation

Fall 2017

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This course will focus on the primary activities performed by venture capital professionals, including how they raise capital, how they structure their funds, as well as how they select, fund, and exit high-growth privately-held companies.

- We start by outlining **how venture capital funds are organized**, how and from whom they raise capital, and in what type of firms they typically invest. A good portion of the section will **examine the risk return profile of venture capital** and whether venture capital “beats the market,” whether it lowers risk of the limited partner’s portfolio, and how the great uncertainty associated with growth firms should be priced.
- The **second section** of the course will examine corporate valuation and value drivers. Given the incredible uncertainty associated with high-growth companies, alternative methods such as **key value driver models and comparable transactions** must be employed to triangulate results. Special attention will be given to the valuation process for small, illiquid, high-growth companies versus mature companies. For instance, how do you bound reasonable estimates of revenue growth, operating margins, and capital productivity when little historical data is available?
- The **third section** of the course will examine valuation techniques necessary to **value complex securities** associated with venture capital and high growth companies. Preferred stock held by venture capitalist has conversion features that resemble a combination of debt and equity. Therefore, options models must be employed to determine their economic (versus fully-diluted) value.

Complementary Classes: The class will focus on the financial aspects of valuing and funding high growth companies. A **critical skill** to venture capital that we will cover *only briefly* is screening and selecting potential investments. To develop a well-rounded skill set, I recommend Entrepreneurship (MGMT 231/801) and Venture Capital and Entrepreneurial Management (MGMT 264/804).

Reading Material

The course will rely on a textbook and a few supplemental readings (which can be found on canvas, under files/readings). The textbook can be purchased in the campus bookstore or online:

- Venture Capital and the Finance of Innovation (2nd edition) by Andrew Metrick and Ayako Yasuda, 2011, John Wiley & Sons, Inc, NY.

The course will also rely on chapters from a secondary text:

- Valuation: Measuring and Managing the Value of Companies (6th edition) by Koller, Goedhart, and Wessels, 2015, John Wiley & Sons, Inc, NY.

Chapters from *Valuation* will be provided for you on canvas.

In-Class Requirements

Please bring three items to EVERY class: your name tent, the lecture's notes, and a basic calculator. As the semester progresses, please remain diligent. I tend to be relentless with those who come to class empty-handed.

Lecture notes: I strongly recommend BUYING the lecture notes (or printing the entire deck). The lecture notes are sold at printing cost by Wharton Reprographics. We will use the lecture notes to complete problem sets in class. If you prefer to print your own notes lecture-by-lecture, I understand; but trust me, many of you will be less organized / prepared than your classmates who have a complete well-structured set of notes!

Assignments & Grading

There will be three individual assignments (15% total), two group projects (25% total), and two exams (30% each). For individual assignments, I expect you to work alone and hand in your own work. You can discuss class tools, but not the assignment. For group work, please self-select groups of between 3-5 people, no exceptions. If you have six people, create two groups of three. You can switch groups between projects, but this is NOT recommended. For classes with multiple sections, you can form groups across sections.

Class participation will not formally be scored, but students at the grading cutoffs will be evaluated for their ability to generate an active and positive class environment. The assignment/exam due dates and grading breakdown will be as follows:

	Assignment/Exam	Due Date	Grade
1	Individual Assignment: Portfolio Review	9/18/2017	5%
2	Individual Assignment: LP/GP Contracts	9/27/2017	5%
3	EXAM I (in class)	10/11/2017, in-class	30%
4	Group Project: Strategic Assessments	11/1/2017	10%
5	Group Project: Private Company Valuation	11/15/2017	15%
6	Individual Assignment: Term Sheets	11/29/2017	5%
7	EXAM II (during finals)	12/19/2017 @6pm	30%

Teaching Assistants & Office Hours

We have five teaching assistants for the class. If you have questions concerning assignments or practice exams, please e-mail your primary TA first. If they are out of town, only then reach out to the other TAs. Again, all questions concerning assignments and practice exams will be redirected to TAs, so start there! If you have questions about the course notes or content beyond the class, please come see me during office hours.

Your primary TA is based on the first letter of your last name:

Names A-D	Raja Atluri <ratluri@seas.upenn.edu>
Names E-J	Katerina Dyakova <edyakova@wharton.upenn.edu>
Names K-O	Meghana Jayam <mjayam@wharton.upenn.edu>
Names P-S	Zane Stiles <zstiles@wharton.upenn.edu>
Names T-Z	Krishna Bharathala <kbhara@wharton.upenn.edu>

Office Hours: The TAs will be holding office hours on Monday and Tuesday at 5pm, and Thursday at 6pm in the finance suite, SHDH 2300/2400. I will be holding office hours on Wednesdays 12-1:30pm in SHDH 2422 and by appointment.

Regrade policy. All regrade requests must be submitted in TYPE and emailed to your primary TA within ten calendar days following the return of your graded work.

Academic Integrity

I expect you to follow Penn's code of academic integrity when completing problem sets, group work, and exams. Allegations of impropriety should be brought directly to me, which in turn will be referred to the University Honor Council. For more, see:

http://www.upenn.edu/academicintegrity/ai_codeofacademicintegrity.html

I look forward to meeting each and every one of you this semester! Best, Prof. Wessels.

Venture Capital and the Finance of Innovation

Course Schedule

Section	Week	Date	Note		Reading
Course	1	8/30	n/a	Course Overview & The VC Cycle	No Reading
Introduction	2	9/6	1	Insights from Industry Statistics	Metrick 1 & VC Update
Section 1: The Limited Partner's Perspective	3	9/11	2	Raising LP Capital: Organization Structure	Metrick 5
		9/13	n/a	No Class	No Reading
	4	9/18	3	Raising LP Capital: Partnership Compensation	Metrick 2
		9/20	4	Theory: Risk and Return for LPs	Metrick 4.1-4.2
	5	9/25	5	Theory: Risk and Return for Founders	Metrick 4.3
		9/27	6	In Practice: Does VC beat the market?	No Reading
	6	10/2	7	Choosing amongst funds: Performance Metrics	Metrick 3
		10/4	8	Choosing amongst funds: Persistence of Performance	No Reading
Section 2: Valuation and Analysis of High Growth Companies	7	10/9	n/a	Extra OH with TAs	No Reading
		10/11	n/a	EXAM I	No Reading
	8	10/16	9	Screening Startup Opportunities	Metrick 7
		10/18	10	Key Value Drivers: Theory	Valuation, Chapter 3
	9	10/23	11	Key Value Drivers: AtriCure	Valuation 6
		10/25	12	Key Value Drivers: Cash Burn	Metrick 10
	10	10/30	13	Mapping Value Drivers to DCF: Margin	Metrick 11
		11/1	14	Mapping Value Drivers to DCF: Capital	Valuation, Chapter 6 & 7
	Makeup	15	Using Multiples to Triangulate Valuation	Metrick 12	
Section 3: Term Sheets, Capital Structure & Financing Growth	11	11/6	16	Term Sheets: Entrepreneurial Incentives	Metrick 8
		11/8	17	Term Sheets: Capital Structure	Metrick 9
	12	11/13	18	Term Sheets: Down Rounds	Wilson Sonsini
		11/15 (D)	19	Fundamentals of Options Pricing	Metrick 13
	13	11/20	20	Valuation of Series A: Using the Model	Metrick 14
		11/27	21	Valuation of Series A: How VCV Works	No Reading
	14	11/29	22	Valuation of Series B	Metrick 15.1-15.2
	15	12/4 (D)	23	Series C and Beyond	Metrick 15.3-15.5
		12/6	24	Angel Financing	HBS: The Changing Face of Angel Investing
16	12/11	n/a	Catch-Up & Review	No Reading	