UNIVERSITY OF CALIFORNIA, DAVIS
GRADUATE SCHOOL OF MANAGEMENT

Venture Capital and the Finance of Innovation

Winter 2020	MGT 265	Professor
2310 GH		Ayako Yasuda
W 12:10-3:00pm		3206 Gallagher Hall

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This is an elective course focused on problems entrepreneurs face when raising capital for startups, high-growth companies and innovation-driven projects. It will address finance principles related to the valuation of startup/high-growth companies, the structuring of venture capital term sheets, risk & return of venture capital industry, and issues related to financing of innovative projects in sectors such as biotech, IT, and energy.

The target audience for the course is anyone who is interested in participating in innovative sectors of the economy, whether as founders of startups, business development professionals at established companies, portfolio managers for private equity and venture capital, or analysts for technology sectors. Most fundamentally, you will learn that entrepreneurship and innovation are not just about identifying and pursuing new business opportunity but also about solving the problems of raising capital and bearing risk while doing so.

To start out, we will examine enterprise valuation, where special attention will be given to the valuation methodology for small, illiquid, high-growth companies versus mature companies. For instance, what does the fair value of a company that is currently losing money but has a small chance of achieving an outsize growth in several years come from? How do you determine an exit valuation – that investors who provide capital today could realize – under a successful scenario? How do you create reasonable estimates for revenue growth, margins, and capital productivity when little historical data is available and there are few comparable companies? Two models used to tackle this question are a variant of the discounted cash flow (DCF) model (called the "Reality-Check" DCF model in this class) and the comparables model.

Next we will examine the dynamic process of structuring and negotiating a term sheet between a startup and a VC investor. Since financing of startups and innovative projects is typically staged – with the next round financing becoming available upon successfully reaching a milestone – not only do parties need to take into account the impact of the investment on the firm's current capital structure, but also how today's decision to receive investment might affect the set of options available to the firm in the future. Moreover, if the current round is not the firm's first round of funding, not only do the current investor but also the previous investor need to approve the investment terms. Terms of investments often reflect these multi-dimensional

negotiations among related parties and complex securities called convertible preferred stock are typically used in these transactions rather than straight equity. We will examine valuation techniques necessary to value these complex securities. Preferred stock held by venture capitalists has conversion features that resemble a combination of debt and equity and option-pricing models is employed to determine their fair value today. Tools specifically developed for this segment of the book are used to facilitate learning complex features of VC term sheets and to enable visualization of how terms are negotiated between entrepreneurs and VCs.

We also learn how venture capital funds are organized, how revenues and profits are split between venture capitalists and investors backing the funds, how and from whom they raise capital, and in what type of firms they typically invest. A good portion of this 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 high uncertainty of growth firms should be priced. A critical question is: How much of venture risk is systematic risk (for which investors demand premium) vs. random risk (which investors can diversify away)?

We will wrap up the course by examining broader issues related to funding innovative projects, in which high degrees of uncertainty — technological, business/market-related, and regulatory — are inherent. A focus will be placed on the value of embedding "flexibility" into a project (e.g., going through stages of clinical trials in a drug development project) and how and when such flexibility (called real options) enhances the value of the project.

READINGS

The required primary text for the course is **Venture Capital & the Finance of Innovation** (John Wiley and Sons), 2nd edition, by Andrew Metrick and Ayako Yasuda. A textpak consisting of cases (to be used in class and in assignments) will be available on study.net. Lecture notes will be made available on the course web page by the evening before the class.

EVALUATION

There will be an in-class midterm counting for 20%, and a final exam counting for 30% of the course grade. The final exam will cover the entire course. There will also be 3 homework assignments counting for 24%, an in-class quiz counting for 6%, and class presentation counting for 20% (8% for draft submission, and 12% for final presentation). Homework and draft submission grades will be the same for team members; the final presentation will have a group and individual component, and each member should participate in the presentation.

For students who show an exceptional improvement in performance in the final exam compared to the midterm (either an increase of at least 20 percentiles in rankings or 20% in scores) the weights will be changed to 10% for the midterm and 40% for the final. To determine the final grade distribution, a numerical weighted average of the four components will be computed. If medical problems force you to miss an examination, please contact me ***before*** the exam.

HOMEWORK AND PRESENTATION GROUPS

The homework assignments and class presentation are to be done in groups of three to four students. All members of the team will receive the same grade on homework assignments. Students are responsible for printing names of all students on the cover page of assignments. Your team will give one group presentation in class counting for 20% of your course grade (8% for draft submission, and 12% for final presentation).

NOTICE OF THE CODE OF ACADEMIC CONDUCT

As per Regulation 537, students are provided with notice of the Code of Academic Conduct as follows:
http://sja.ucdavis.edu/files/cac.pdf
Students who violate the Code of Academic Conduct are subject to disciplinary sanctions that include censure, probation, suspension, deferred separation or dismissal from the University of California.

ACADEMIC PARTICIPATION REQUIREMENT

Students are required to complete their Academic Participation verification no later than the quarter add deadline. The link for this is provided below:
https://participate.ucdavis.edu

ASSIGNMENTS

Each homework assignment will be evaluated on a 10-point scale. They will be used as learning tools for vocabulary and for practical working of concepts. **Please use no more than 3 pages of write-ups and 3 pages of attachments (tables, charts) for each assignment.** For questions requiring calculations, please explicitly write out and explain your calculations in your write-ups whenever possible. Doing this, rather than merely copying the final numbers from your spreadsheets, has two benefits. First, it will help you prepare for examinations, when you will need to rely only on calculators. Second, it will help me understand what you did and give you credit accordingly. In completing the assignments, you may not use any materials from previous offerings of the course.

TENTATIVE COURSE SCHEDULE, READINGS AND DUE DATES

Please note that the schedule is approximate; some topics will take longer than a session and others will take a shorter time. If anybody has a problem meeting a due date because of religious holiday, please let me know as soon as possible. Extensions will be granted in such cases. VCFI refers to the textbook *Venture Capital and the Finance of Innovation*. In addition, handouts will be posted on the course web page as supplemental readings.

	Date	Topics	Reading/due date
1	Jan 8 (W)	VC Organization Structure and Partnership Agreements with Investors (LPs)	VCFI Ch. 1 & 2
2	Jan 15 (W)	VC as an Asset Class: Risk and Returns	VCFI Ch. 3, 4 & 7
	Jan 21 (T)		**HW #1 due**
3	Jan 22 (W)	VC in the Global Economy / The Best VCs/ Capital structure of VC-backed companies	VCFI Ch. 5-6, 8-9
4	Jan 29 (W)	Capital structure of VC-backed companies VC Method	VCFI Ch. 8-9 &10
	Feb 2 (Sun)		**HW #2 due**
5	**Feb 5 (W)**	**In-class Midterm (12:10-1:25pm) Speaker Session: John Hamer, DCVC Bio**	
6	Feb 12(W)	Valuing high-growth companies with DCF and multiples /Call option valuation	VCFI Ch. 11-13
7	**Feb 19 (W)**	**VCIC team presentation /** VC preferred stock valuation / Implied valuation	VCFI Ch. 14, 16-17
8	Feb 26 (W)	**In-class quiz (12:10-12:30pm) /** Multiple VC Rounds	VCFI Ch. 15
	Mar 3 (T)		**Project draft due**
9	Mar 4 (W)	R&D finance /Real option valuation in R&D	VCFI Ch. 19&21
10	Mar 11 (W)	Real option / **Class presentation**	
	Mar 15 (Sun)		**HW #3 due**
	Mar 18 (W)	**Final Exam 12:10-3:00pm**	**2310 GH**