Rothberg International School
בית הספר לתלמידים מחו"ל ע"ש רוטברג

THE HEBREW UNIVERSITY OF JERUSALEM
האוניברסיטה העברית בירושלים

Department of Summer Courses
and Special Programs

המחלקה לקורסי קיץ
ותוכניות מיוחדות

VC in Emerging Technologies: Investing in the Future
(Course No. 48853)

Course Instructors: Dr. Elishai Ezra Tsur & CPA Shmuel Bornstein

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January 03 – 13, 2021

45 Academic Hours, 3 Academic Credits

Tentative Course Syllabus

Course Description

This course exposes participants to the disruptive technologies that are shaping tomorrow's world and provides them with a practical understanding of the basics of funding, which are essential in leveraging emerging business opportunities. Participants will gain insight into the ways that technologies such as AI, Bio-Engineering, Cyber, IoT, 3D printing, and blockchain will impact our world in the next decade. Through an exploration of various examples of investment opportunities in Israeli startups, participants will deepen their knowledge of key concepts and the basic structures of venture-backed deals - from the perspectives of founders, for the benefit of investors.

Site Visits and Meetings

Through a wide array of guest lectures and behind-the-scenes visits to cutting-edge research institutes, high tech companies, and financial centers/venture capital firms in Israel's entrepreneurial ecosystem and high-tech industry, participants will meet face-to-face with:

- Seasoned angel and venture capital investors
- Groundbreaking scientists and thinkers
- Researchers from innovative labs and institutes
- Founders and executives from disruptive hi-tech companies
- Prominent industry and technology experts

Due to the busy and dynamic schedules of the companies and guest speakers that collaborate with this initiative, meetings and visits are subject to change and will be finalized at a later date. As a reference only, participants may refer to last year's itinerary for the InnovNation summer program.

Course Outline

Module 1: Emerging Technologies

Throughout the course, participants will learn about the impact of technology on human evolution and the general status of emerging and future technologies, latest developments, leading innovators and companies in various industrial fields, e.g., AI, Bio-Engineering, Cyber, IoT, 3d printing, and blockchain.

Module 2: Key Concepts and Strategy of Investment and Fundraising

- Part 1: Understanding basic valuation negotiation tools, capital raising strategies and selection of best investors.
- Part 2: Learning about different types of shares, dilution, preemptive rights, the 'power law', ESOP, debt vs equity considerations and anti-dilution protection.
- Part 3: Discovering the 'great beyond' in a startup's lifecycle: the exit.
- Bonus: Putting knowledge to the test: The practice cap table maker.

Assignments and Grading

Participants who do not require academic credit will be exempt from the final assignment.
- 10% - Class attendance and participation
- 70% - Final assignment
- 20% - Presentation

Final assignment:

Students will choose between two final assignment options:

Option 1: Investment and Fundraising

Students will be placed in sets of paired groups startups and VCs. Each startup/VC pair is to engage in a term sheet negotiation that is appropriate for a given company stage/ industry/ vertical. Groups need to justify economic and control terms, while managing the conflicting interests and stakeholders. The term sheet negotiation will be based on the methodologies learned in class. In addition to presenting their term sheets in class (in an 'investor committee' style forum), students must submit a written paper, which must be submitted no later than two weeks after the last day of class.

Graduate students are expected to approach the course instructor at the beginning of the course and to inform the Rothberg International School (rissummer@savion,huji.ac.il) of their interest in earning graduate credit. The final assignment should meet the expectations of a master's level assignment and will be evaluated according to the standards and criteria used in Israel's MBA programs. Graduate papers are due 2 months from the last class.

Option 2: Emerging Technologies

The course provides a broad review of current cutting-edge technologies and progressing trends. Students will prepare a report about any one of the breakthrough technologies or its derivatives studied during the course. In the report, students will analyze the selected technology, its possible effects on the industry and society, and the opportunities and threats posed by the technology in the next decade.

The paper has to incorporate data from 5-8 academic papers / industrial reports or evaluation.

Note: The topic for each paper and main references (3-5) must be approved by the course instructor, Dr. Elishai Ezra Tsur (elishai85@gmail.com).

- <u>Undergraduate students</u> can prepare the final assignment in groups of up to 3 members, delivering a 10-page paper (including references). **The paper must be submitted no later than two weeks after the last class.**
- <u>Graduate students</u> must individually submit a 15-20-page paper within 2 months following course completion.

It is mandatory for all students to attend classes, guest lectures, field trips, etc. Failure to attend classes will result in a student being denied the right to partake in the final assignment and receive a final grade in the course. Students who have a justified reason to miss class (illness, mourning, etc.) must communicate with their instructors and the Department of Summer Courses and Special Programs, and complete the material that they miss. Students who miss class due to illness must obtain a signed and stamped sick note from a treating physician and submit it to the Department of Summer Courses and Special Programs immediately following their return to class. Failure to do so will result in an unexcused absence. The Department reserves the right to refer the issue to an Academic Committee. In some cases, the Academic Committee may decide, in light of the requirements of the course, that it is not possible to make up the missing coursework.

Plagiarism will not be accepted and will lead to disqualification of the paper.

Recommended Bibliography

READING LIST

The order and topics of the lectures may vary according to the background and area of expertise of speakers and companies that will take part in the program.

<u>Module 1:</u>

1. ***Technology & Human Evolution***

    <u>Topics:</u>
    Ethical, legal & regulatory aspects of future technologies, technology & society, technological evolution, exponential technologies

    <u>Bibliography:</u>

- Kurzweil, Ray (2006), *The Singularity is Near*, New York: Penguin. **Overseas Library 612.82 K96**
- Harari, Yuval N. (2014), *Sapiens: A Brief History of Humankind*, London: Vintage Books. **Overseas Library 909 H254**
- Harari, Yuval N. (2016), *Homo Deus: A Brief History of Tomorrow* (2016), New York: Harper. **Overseas Library 909 H254**

2. *Agriculture & Food*

Topics (among others):
Genetic engineering of plants, synthetic meat, robotic farms, prevention of aging and decay

Bibliography
- George Acquaah (2012) *Principles of Plant Genetics and Breeding*, Wiley. **E-book**

3. *Water & Energy*

Topics (among others):
Smart cities, solar energy, green tech, green energy

Bibliography:
- Diamandis, Peter H. (2012), *Abundance: the future is better than you think,* New York: Free Press. **Overseas Library 303.48 D537**
- Peter H. Raven, David M. Hassenzahl, Mary Catherine Hager, Nancy Y. Gift, Linda R. Berg (2015), *Environment*, Wiley **Overseas Library 574.5 R253**

4. *Transportation*

Topics (among others):
Autonomous cars, peak oil, electric vehicles

Bibliography:
- Vivek Wadhwa (2017). *The Driver in the Driverless Car: How Our Technology Choices Will Create the Future*, Berrett-Koehler Publishers **Overseas Library 303.48 W122**

5. *Materials & Production*

Topics (among others):
Rapid prototyping (Objet, Shapeways, Cubify, etc.), C&C manufacturing, nano-materials and smart materials

Bibliography:
- Chris Anderson (2014), *Makers: The New Industrial Revolution,* Crown Business **Overseas Library 338.04 A544**

6. *Bio-medical Engineering*

Topics (among others):
Tissue engineering, stem cells, medical robotics, tele-medicine, designer babies, brain-machine interfaces, genetic engineering

Bibliography:

- Francis S Collins (2011), *The Language of Life: DNA and the Revolution in Personalized Medicine*, Harper **E-BOOK**
- Hessel, Andrew, Goodman, Marc & Kotler, Steven (2012), "Hacking the President's DNA", *The Atlantic*. **Free access**: http://www.theatlantic.com/magazine/archive/2012/11/hacking-the-presidents-dna/309147/
- Lebedev, Mikhail A. & Nicolelis, Miguel A.L. (2006), "Brain–machine interfaces: past, present and future", *Trends in Neurosciences*, vol. 29, p. 536-546. **E-journal**

7. *Security*

Topics (among others)
Airport security, future of military, military technologies

Bibliography

- Marc Goodman (2015), *Future Crimes: Everything Is Connected, Everyone Is Vulnerable and What We Can Do About It*, Doubleday **Overseas Library 364.1 G653**

8. *Internet & AI*

Topics (among others)
Privacy, bots & AI, narrative science, IBM's Watson

Bibliography

- Saemnz, Aaron (2011), "From Jeopardy! to insurance – IBM's Watson AI hired by Wellpoint for medical expertise", *Singularity Hub*. **Free access**: http://singularityhub.com/2011/09/20/from-jeopardy-to-insurance-ibms-watson-ai-hired-by-wellpoint-for-medical-expertise/
- Nowak, Peter (2012), "Silicon sirens: The naughty bots out to seduce you", *New Scientist*. **Free access**: http://www.newscientist.com/article/mg21428705.900-silicon-sirens-the-naughty-bots-out-to-seduce-you.html
- George, Alison (2006), "Living online: The end of privacy?", *New Scientist*. **Free access**: http://www.newscientist.com/article/mg19125691.700-living-online-the-end-of-privacy.html

Thought-provoking Sci-Fi movies recommendations:

1. GATTACA

Full genome screening for everyone and genetic prejudice.
The birth of two brothers:
https://www.youtube.com/watch?v=eRpQMW77T_o

2. **Sight - a short Israeli Sci-Fi movie (7min)**
Futuristic date and augmented reality.
https://www.youtube.com/watch?v=lK_cdkpazjI

3. **Robocop 2014.**
Autonomous war robots and man-machine interface.
Occupation of Tehran scene:
https://www.youtube.com/watch?v=aXUMP9cP5G8

4. **Transcendence.**
Over-popularized, yet, some nice demonstrations of artificial general intelligence (AGI) and nano-robotics tissue regeneration.
Ecological prospects of nanobots scene:
https://www.youtube.com/watch?v=VCTen3-B8GU

5. **Ex-Machina.**
Excellent thriller about artificial general intelligence, robotics and ethics.
Human rights to non-human intelligence:
https://www.youtube.com/watch?v=8gVY6pC4F54

6. **AI.**
Artificial general intelligence (AGI), robotics, bioism (the discrimination and racism of artificial life by biological life).
Pool scene:
https://www.youtube.com/watch?v=pTAmOvTVnm0

7. **The lawnmower man.**
Virtual reality.
Virtual sex scene:
https://www.youtube.com/watch?v=sYkgWJzJ6fE

8. **Big Hero 6.**
Swarm robotics, Medical robots.
Microbots swarm:
https://youtu.be/ep2-W1X65KI

9. **Uncanny valley - short movie 9 min**
Virtual reality, future psychopathology, future wars, wisdom of the crowds
https://www.youtube.com/watch?v=UXX0TRtg5Vk

Module 2

Feld, B., & Mendelson, J. (2013). *Venture deals: be smarter than your lawyer and venture capitalist*. 2nd ed. Hoboken, N.J.: Wiley. (Compulsory)

Ramsinghani, M. (2011). *The business of venture capital: Insights from leading practitioners on the art of raising a fund, deal structuring, value creation, and exit strategies*. Hoboken, N.J: John Wiley & Sons.

Horowitz, B. (2014). *The hard thing about hard things: Building a business when there are no easy answers* (First edition.). New York: Harper Business.

Thiel, P., & Masters, B. (2014). *Zero to one: Notes on startups, or how to build the future.* London: Virgin Books.

Carreyrou, J. (2018). *Bad blood: Secrets and lies in a Silicon Valley startup.* New York: Alfred A. Knopf