

Brandeis University
International Business School

BUS 261a
Managing Technology and Innovation

Course Syllabus

V2

Spring 2020

Thursdays, 12:30-3:20
International Hall

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Course website: www.strategygroove.com

Course Outline

- **Cases** and some articles are in case packet: <https://hbsp.harvard.edu/import/692366>
- **Other articles** are available on the Business Source Premier database at Brandeis LTS.

DATE	TOPIC	SECTOR	REQUIRED CASES, READINGS, PROJECTS
1/16 Thur	What is Innovation in Technology?	Conceptual framework	<ul style="list-style-type: none"> • 19 Moats..., CBInsight • Drawdown.org
1/23 Thur	Tech Strategy Fundamentals	Computer hardware	<ul style="list-style-type: none"> • <i>Intel Corporation: 1968-2003 (HBS case)</i> • The Information Economy (Shapiro/Varian)
1/30 Thur	Networks and Platforms	Web 2.0	<ul style="list-style-type: none"> • <i>LinkedIn Corp, 2008 (HBS case)</i> • Multi-sided Platforms: Foundations and Strategy (HBS note) • Ecosystems and Platforms (G-C video)
2/6 Thur	Disruptive Technologies	Media	<ul style="list-style-type: none"> • <i>Netflix in 2011 (HBS case)</i> • Disruptive Technologies (Christensen) • Project Drawdown -- Coming Attractions
2/13 Thur	Climate as an Innovation Challenge	Earth	<ul style="list-style-type: none"> • <i>Climate Change in 2018 (HBS case)</i> • Project Drawdown (drawdown.org) • TEAM PREZOS: Project/team selection
2/27 Thur	Lean Business Development	Retail	<ul style="list-style-type: none"> • <i>Rent the Runway (HBS case)</i> • Lean Start-Up (Blank)
3/5 Thur	MIDTERM	Surprise!	<ul style="list-style-type: none"> • Case will be distributed on 3/3 • In-class, 2-hr, written case exam
3/12 Thur	IP Strategies	Patents	<ul style="list-style-type: none"> • <i>Intellectual Ventures (HBS case)</i> • TEAM PREZOS: Selected teams present • Paper topic outlines due
3/19 Thur	Cyber Innovation	Fin-tech	<ul style="list-style-type: none"> • <i>Bitcoin (HBS case)</i> • TEAM PREZOS: Selected teams present
3/26 Thur	Architectural Innovation	Auto-tech	<ul style="list-style-type: none"> • <i>Mobileye (HBS case)</i> • Ecosystem Strategy (G-C video) • TEAM PREZOS: Selected teams present

4/2 Thur	Climate Interactive Simulation Game	Earth	<ul style="list-style-type: none">• Negotiation game in World Court• Open to other students• Part of Business of Climate Change Week
4/7 Tues	The Business of Climate Change	Earth	<ul style="list-style-type: none">• Discussion of what we learned during Climate Week, in various classes• TEAM PREZOS: Selected teams present
4/23 Thur	Innovation Ethics	Business and Society	<ul style="list-style-type: none">• Readings TBD
5/4 Mon	<i>Final papers due for graduating students</i> – email PDF format to bgc@brandeis.edu		
5/11 Mon	<i>Final papers due for all other students</i> – email PDF format to bgc@brandeis.edu		

Course Objectives

Learn Innovation – Do Innovation. Brandeis wants to promote innovation by its students. This course teaches the what, why, how, and so what of innovation. It gives students an analytical framework, draws lessons from classic cases, and asks students to apply these ideas to “innovation challenges” that we will face in the future. This year, we will focus on the challenges of climate change, and innovation in clean tech and related fields.

The course is intended for master’s students and advanced undergraduate students interested in careers in large or small companies that face innovation challenges and so need strategies to create and capture value from new technologies and new business models.

Innovation challenge projects – the business around climate change solutions. The innovation challenges that we will try to tackle in this course are posed by climate change. The big questions are daunting: How do we decarbonize our energy mix? How do we rebalance our food and land resources? How do we cope with the climate changes that are likely, given our current trajectories?

We will gain perspective on these big questions by focusing on the **business side of climate change**. That means examining questions at the level of industries and firms: How can an electric car business grow? What is the market for meat substitutes? Who are competitor strategies in wind and solar technologies? How can a new technology penetrate established markets? How can new sustainability ideas move from lab to practice?

For a sample of the kinds of industries and projects we will study, see this excellent review of solutions to climate change: www.drawdown.org.

Learning goals. The readings, study assignments, class sessions, projects, and papers in this course are designed to help you:

- Understand the strategies and business models in technology sectors
- Develop an approach to diagnosing innovation challenges facing firms
- Apply strategic thinking in a range of tech industry and company contexts
- Use messy, real-world data to help business innovators shape their strategy

Course content. This course deals with issues of general management, not with technical economics or finance. Among the main topics covered are the following:

- Demand and supply side economies of scale
- Information economics
- Multi-sided market and platforms
- Disruptive technologies and business models
- Ecosystem strategy

- Intellectual property strategy
- Social impact of innovation

Course materials

The cases and readings will cover the strategic issues in technology and innovation strategy today: information economics, network externalities, disruptive technologies, platform strategies, lean start-up models, value chain innovation, intellectual property strategies, and national innovation policies. Most of the cases cover more than one of these topics. Conceptual readings are assigned along the way. Sectors covered include computers, web 2.0, healthcare, fintech, automotive, media, retail, and labor. Six guest speakers will bring a variety of perspectives and experience to the classroom discussion.

There is no required textbook, but I recommend Scott A. Shane, *Technology Strategy: For Managers and Entrepreneurs* (Pearson, any edition). All required readings are free online, or at the Brandeis LTS, or in the case packet available from HBR, as follows:

- The **case packet** will be available for purchase online here: <https://hbsp.harvard.edu/import/692366>
- **Some articles**, as noted in the class assignments, are available for free on the EBSCO Business Source Premier (BSP) database of Brandeis Library; permalinks are provided in this syllabus, but if they don't work, please just search for the paper in the EBSCO database. (You will need your UNET account info to sign on to BSP.)
- **Lectures and some handouts** will be available on www.strategygroove.com. This site will be used **instead of LATTE**, which is not used for most purposes.

Relationship to other courses. There are no formal prerequisites, but it is assumed that students have a background in micro-economics and business studies, and are able to analyze financial statements. If you need a refresher on business management, review Ronald J. Ebert and Ricky W. Griffin, *Business Essentials*, any edition (Englewood Cliffs, NJ: Prentice Hall, 1999 or later). This text is used in the undergraduate course BUS 10a ("Functions of the Capitalist Enterprise") and is on reserve in Goldfarb Library.

Keeping up with current trends. News sites every day share stories of innovation. This course will encourage and enable you to keep up with current trends and help you to understand them. To do this, we will discuss a number of current trends in class, beyond the cases that are assigned. The innovation challenge project will allow you to dig deeply into a real situation and apply the lessons you are learning in this and other classes. We will host a large number of class visitors who will bring diverse perspectives from practice. Finally, I encourage you to **subscribe and scan daily one or all three of these free newsletters**:

- **Pro Rata, by Axios.** This is one of a new series of daily newsletters, with very condensed and punchy news, that cover everything from politics to tech. This one is the deals one. Go to: <https://www.axios.com/axios-pro-rata/>
- **DealBook, by New York Times.** The single best source for daily news on major deals and contains excellent analysis, with links to articles in top business periodicals. Go to: <http://www.nytimes.com/newsletters/dealbook>
- **Term Sheet, by Fortune.** An excellent source of investment news, including private equity, IPOs, and large deals, with links to excellent analysis in *Fortune*. Go to: <http://fortune.com/gettersheet/>

Learning by the case method

Because this course is based on the case method of learning, class participation by all students is critical. This method of learning is based on three premises. First, we can all learn a great deal from each other's points of view and experience. Second, we often learn more by questioning each other and debating issues than by listening passively or by reading alone. Third, there is no "one best way" to manage complex business problems; rather, we must search for alternatives and weigh them critically.

In order for this method to work, we must all be prepared to go beyond case facts in the discussion. We will assume that everyone has prepared the case and readings thoroughly--there is simply no time to explain or reiterate case facts. Our discussions will aim to be analytical, not descriptive. This does not mean that we will ignore the facts; to the contrary, students should strive to back up their arguments with the facts of the case. In sum, I will expect three P's from students in every class:

- **Presence:** You are expected to prepare for and attend all class sessions. It is your responsibility to catch up on material for any class that you miss. You may be excused from class if you are ill, or for urgent family or personal reasons. Under those circumstances, you may make up work by submitting a written analysis, upon agreement with instructor (optional). Attending career fairs, interviews, lunches, internships, team meetings, or other career-related events are **not** excused absences. You need to make your own trade-offs about these, i.e. decide which are important enough for you to miss class. You will not be penalized for the fact that you missed an occasional class for such reasons, but you will obviously miss the material presented and miss a chance to participate in class; there will be no make-up assignments for these absences. Multiple unexcused absences may carry a penalty in class participation.
- **Preparation:** You are expected to do the class assignments on time. This means that you are ready to start class or answer assigned questions if called on. In addition, it means that you have analyzed the case and exhibits, not just read them lightly. Where there is numerical analysis to be done to understand the financials or economics of the case,

you will be expected to do this. It is often extremely useful to work in groups in preparing the cases for each class; you are encouraged to do this.

- **Participation:** You are expected to share your views and questions in class. Your class participation grade will depend on the cumulative quality of your contributions in class (see further below). This means that frequency of contributions counts, but also the quality of your comments. A good quality comment is one that applies relevant concepts to the facts of the case and that advances the discussion of issues on the floor. Listening patiently to your peers and engaging them respectfully will be valued.

Class times are Thursdays 12.30 – 3.20, with a 15min break in between. **Please be on time; we start sharply at 12:30. Late arrivals are disruptive. Since our class will be relatively small for the large auditorium, please sit in the first three rows.** If you need to arrive late or leave early, please warn me beforehand. Please eat something before class or during the break. If you must bring something to eat into class, please avoid snacks that may be distracting to your neighbors.

In most class sessions, we will discuss the assigned case in the **first part of class**, which may last between 90min and 120min. Short lectures may be folded into this part of class at any point – at the start of class, or when a topic comes up that deserves a short lecture. You will be expected to draw lessons from the class discussion with your peers, from the instructor's comments and board notes, and from the lectures. The **second part of class**, after the break, will be devoted to team presentations and on developing critical skills in analyzing and developing innovation strategy.

Laptops are not needed during class discussion and **should not be open**; even "quiet" screens are distracting to those around you and to yourself. You should print the materials you need for class and take notes on paper, as it is not possible to analyze a case deeply without marking it up. Calculators are allowed in class, text-messaging and Internet access are not. These rules also apply strictly during the in-class mid-term exam too. They also apply when we have visitors (especially then!) and when your fellow students are presenting.

Grading

Students will be graded on a combination of the following:

- **Contributions to class discussions (40%).** I will keep a record of class performance for each student and determine a grade based on the frequency and quality of in-class comments. Work on any occasional exercises and on team presentations will be counted as class participation, as will your in-class feedback to the work of your peers. Students will receive a midterm evaluation on class participation. To help me get to know you and remember your comments, you should always have your name card up. If you feel unsure about your participation or the class process, ask me for clarification.

- **A written midterm exam (25%).** This will consist of analysis of a case. On the day before the midterm, I will send you the case by email. The exam itself will take place during normal class hours. You will then be asked 2-3 questions about the issues in the case, which should be answered in writing during the 2-hr exam period. This is an open-book exam, i.e. you may bring books and printed notes (no computers or reading pads); but hand in only what you write in the exam class. The required analysis will be similar to what we do in class.
- **A final term paper (35%).** Final papers may be written by single individuals or by teams of 2 or 3 students. The final paper is an opportunity for you to delve more deeply into analysis of a innovation challenge, as discussed below.

Final Paper

You may choose to study any firm or organization, but your paper must address an innovation challenge in the real world. You may select topics from team presentations, or anything else. To help you in selecting an appropriate topic, case, and approach, I will review and approve your paper proposal in advance. **Please submit a brief outline of 1-3 above during (or before!) our class on March 12.** This outline does not need to be detailed, but you should try to define your issue and approach and do some preliminary research to check if data are available to address the issue. If you are not sure about your focus, say so in the proposal, and I will try to guide you. We can meet to discuss the paper topic, but I prefer that you first try to develop a rough proposal.

The **paper outline** should cover these points, briefly:

- **Statement of the issue or question to be addressed.** You may choose any issue from those discussed in the course, but must state up front in the paper what you intend to address. In this section, give a short overview of where your issue fits in the field of technology and innovation and what concepts you will draw on to explore your issue.
- **Statement of the evidence (or case) you will use to address your issue,** that is, the firm or organization you will examine, and why this is a good context for your analysis. In selecting the case(s) you will examine, be sure you can get the information you need before you commit to the topic.
- **Choice of concepts or frameworks to be used in analysis.** You will see that there is often a choice of which approach to use in analyzing a strategic issue. But it is important to follow a systematic approach; the frameworks we will learn will help you do this.

The **final paper itself**, due at the end of the course, include the following elements:

- **Presentation of the most important facts about the case you are examining.** For this, you can use data from the business press, from annual reports, and from other sources.

A useful place to start is with the online resources available through the Brandeis library; for a guide, go to: <http://brandeis.libguides.com/Strategy>. At any rate, in your actual paper, you should keep this section to a minimum – describe only what is needed for the reader to understand the context and to begin addressing the issues you are exploring. Do not write a full-fledged descriptive “case.” It is often best to provide the evidence “as you go” during the analysis, rather than as a stand-alone section.

- **Analysis of your evidence.** This is the body and most important part of the paper; use the evidence and the concepts to answer the questions you raised at the start. It is best to choose a clear focus and framework and use it throughout the paper. The grade for the paper will depend substantially on the depth, breadth, and clarity of your analysis.
- **Conclusions.** End with a section drawing the implications of your study for strategic thinking and decision making. What are the main lessons you learned? You do **not** need to provide recommendations to your firm.

Paper length depends on how many students are writing the paper. Papers written by individuals should be 10-15 double-spaced pages, not including exhibits; papers written by teams of two students should be 15-25 pages, and papers by three students should be 25-35 pages. Exhibits should be used and analyzed in the paper, not added as “padding.” Exhibits can be included in the flow of the text or at the back of the paper; if at the back, make sure that the text refers clearly to each exhibit, as needed. The final electronic file that is submitted to me (see below) should have exhibits in the same electronic file; do not send two separate electronic files.

Please be sure to **cite your sources and provide references**. All direct quotes, specific data, paraphrased text, all tables and graphics, and important arguments should be properly sourced with foot- or end-notes; a bibliography can be used as reference for general discussions. Every year I downgrade some papers because of insufficient referencing; papers that plagiarize the work of others in a major way are not treated so kindly. If you have any doubts or confusion about what we require, ask me and or see resources provided at Orientation. **You are responsible for reading and understanding our standards for Academic Integrity – if you have any questions, ask!**

Papers should be **submitted to me by email in PDF format** no later than the day listed in the schedule. Unexcused late submissions will be penalized. If you have a good reason for missing this deadline (e.g. illness), you will need to get an “Incomplete” from me before this date.

Contacting me

Email is the quickest way to reach me; I usually respond promptly. You will also be expected to check your Brandeis email regularly, as I will send out notices to class from time to time. I will have **office hours** in my office (Lemberg 258) on Fridays when school is in session, 1.30-3.00, or

by appointment at other times. Anyway, it is usually best to email me ahead of time, so that I can reserve a time for you (bgc@brandeis.edu).

Success in this four- credit course is based on the expectation that students will spend a minimum of 9 hours of study time per week in preparation for class (readings, papers, projects, team discussions, preparation for exams, and so on.)

You are expected to be honest in all of your academic work. This includes proper citation of the work of others in your papers and presentations. Potential sanctions include failure in the course and suspension from the university. If you have any questions about my expectations, please ask.

If you are a student with a documented disability on record at Brandeis University and you wish to have a reasonable accommodation made for you in this class, please see me immediately. Please keep in mind that reasonable accommodations are not provided retroactively.

Tips for Preparing, Participating, and Learning in Case Classes

1. **Read the assignment questions and think** about how this case and the questions fit in the course. What have we done so far? What appears to be the topic for this class?
2. **Skim the case**; this means:
 - Read opening paragraphs and the
 - Look at every exhibit to see what kind of data are offered
 - Read quickly a few parts of the case to glean the main themes
 - Go back to the assignment questions: What will you need to focus on in the case?
3. If there is an additional reading that is to be used in analyzing the case, read that next, or decide what other **tools you need to attack the case**. Sometimes additional reading is optional; in that case read it later. Use your judgment in allocating reading time.
4. **Read the case** and mark up useful information. Don't highlight all of it; just scribble and highlight as needed to bring out the most important facts and issues. Keep an eye out for case facts that may be useful in answering the assigned questions or the main issues.
5. **Analyze the exhibits**; this means:
 - Identify what important messages they contain that speak to the issues
 - Do some calculations to get beyond the numbers that are presented (e.g. ratios)
 - Spend extra time on exhibits that seem to be core to the issues, skim over others
6. **Prepare your analysis**, this means:
 - Write down your answers to the assignment questions, in bullet or short form
 - Make reference to case facts to support your answers
 - Write down any additional issues that may be interesting to bring up in class
7. **Discuss your analysis** with fellow students; this means:
 - Get together in a study group or over coffee or dinner
 - Hear the perspectives of others; share insights; get tips for your analysis
 - "Rehearse" with them how and what you would say in class
8. You are now **ready for class!**
 - If you are lucky, you will be called to start class; open with your best shot
 - Otherwise, raise your hand and jump into the discussion with additional thoughts
 - Early in a class, you can usually use your prepared analysis; later, topics may evolve
9. **When you get the floor**:
 - Try to connect (build, debate) to what was said before, or to the issues "on the floor"
 - Try to explain your idea and argument, using facts to back it up, and be ready to elaborate
 - Don't be concerned about your speaking skills or accent: We *will* listen!
10. After class, jot down **what you learned**, including
 - New insights about the topic or about how to approach the subject next time
 - Tips to yourself about case analysis and preparation

Study Assignments

Note: For each class, the assignment usually includes one or more cases and one or more conceptual readings (article or chapter). In class we will discuss the cases, while applying the concepts. In other words, you must study and "prepare" each case, using the assignment questions to guide you. Look carefully at the assigned pages, as in some cases you do not read to read the whole case or chapter.

See page 1-2 of this syllabus for a summary of readings and for reminder of where to get the materials. You are responsible for acquiring the materials and following this syllabus.

Thursday, 1/16

What Is Innovation In Technology?

Required readings:

- Review this easy-read about competitive strategy: [*19 Business Moats That Helped Shape The World's Most Massive Companies*](#), by CB-Insight, January 2020.
- Review the sectors and list of solutions at this site: www.Drawdown.org. Click “View Solutions” button and then examine any sector that you wish. The most innovative ideas are in the sector called “Coming Attractions.”

Study questions:

1. What’s new and old-news for you in the “19 Moats” list?
2. Pick a business in the “Drawdown” list. What kinds of technology and innovations will it require? What are the challenges facing a company pursuing these innovations?

Thursday, 1/23

Technology Strategy Fundamentals

Required readings:

Intel Corp.--1968-2003, Ramon Casadesus-Masanell; David B. Yoffie; Sasha Mattu **IN HBR CASE PACKET**

Describes three stages in Intel's history: the initial success and then collapse in DRAMs and EPROMs, its transition to and dominance in microprocessors, and its move to become the main supplier of the building blocks for the Internet economy. Allows a rich discussion of industry structure and transformation in DRAMs and microprocessors, creation of competitive advantage and value capture, and sustainability.

Information Economy: What Every Manager Should Know, Carl Shapiro; Hal R. Varian **IN HBR CASE PACKET**

Technologies change--economic principles do not. This chapter overviews such concepts as the production costs of information goods, the nature of intellectual property, systems competition, switching costs, positive feedback loops, network effects, and standards setting in terms of the strategies that will prevail in our hyper-connected economy.

Study questions:

3. How would you explain Intel's initial dominance and subsequent decline in DRAMs?
4. Why did Intel succeed in microprocessors?
5. Using the concepts in the article, how was the microprocessor business different from the DRAM business?
6. How did Intel create value and capture value in the microprocessor business?

Note: *The article by Shapiro and Varian is chapter one in their book Information Rules, which is highly recommended as background reading for this course, or for your general education in tech strategy. The full citation is in Selected Bibliography at the end of the syllabus.*

Thursday, 1/30

Networks and Platforms

Required readings:

LinkedIn Corp., 2008, David B. Yoffie; Michael Slind; Nitzan Achsaf **IN HBR CASE PACKET**

In June 2008, the online professional networking service LinkedIn became a \$1 billion company. But CEO Dan Nye understood that LinkedIn faced several strategic dilemmas. Founded in 2002, LinkedIn by 2008 had become the world's leading professional networking service (PNS), with more than 23 million members. Aiming to "dominate the business of business networking," in Nye's words, LinkedIn allowed individual members to post a profile on the LinkedIn site and then to use the site's tools to search for job opportunities; to recruit job candidates; to find suppliers, partners, and customers; and to seek out expert advice. The company was also expanding into corporate services that would enable companies to build and manage their own online networks.

Multi-Sided Platforms: Foundations and Strategy, Andrei Hagiu **IN HBR CASE PACKET**

This note offers an analysis of four fundamental strategic decisions and associated tradeoffs that set MSPs apart from other types of businesses (e.g. product firms) and that every MSP entrepreneur and investor should carefully consider. In the last section I also discuss an important boundary condition: when is the MSP business model dominated by related - but distinct - business models?

"Strategic Partnerships: Ecosystems and Platforms" (LinkedIn Learning) by me. You may watch this whole course (29min) to understand the concept of ecosystems, but at least focus on those chapters that refer to platform strategies and network advantages. ***To get to this course (for free):*** Follow instructions to Linked-In Learning at Brandeis this ITS website:

<https://www.brandeis.edu/its/support/linkedin-learning/index.html>.

You will be asked for your Brandeis passwords to sign in. Then search for the course title or my name Ben Gomes-Casseres. You can also get to LinkedIn Learning through LI Premium or a trial account. But it is free for you at Brandeis!

Study questions:

1. Evaluate LinkedIn's strategy to date. What accounts for its success? What are the risks in its strategy?
2. Are there network effects in social networking in general, and in professional networking in particular? Is there likely to be a winner-take-all outcome in these fields?
3. Using the concepts in the note or video, what kind of platform is LinkedIn? Should it subsidize the creation of any of the markets it is involved in?

Thursday, 2/6

Disruptive Technologies

Required readings:

Netflix in 2011, Willy Shih; Stephen P. Kaufman **IN HBR CASE PACKET**

Reed Hastings founded Netflix to provide a home movie service that would do a better job satisfying customers than the traditional retail rental model. But as it encountered challenges it underwent several major strategy shifts, ultimately developing a business model and an operational strategy that were highly disruptive to retail video rental chains. The combination of a large national inventory, a recommendation system that drove viewership across a broad catalog, and a large customer base made Netflix a force to be reckoned with, especially as a distribution channel for lower-profile and independent films. Blockbuster, the nation's largest retail video rental firm, was initially slow to respond, but ultimately rolled out a hybrid retail/online response in the form of Blockbuster Online.

Disruptive Technologies: Catching the Wave (HBR article), Joseph L. Bower; Clayton M. Christensen **IN HBR CASE PACKET AS "OPTIONAL" – ALSO AVAILABLE ON BUSINESS SOURCE PREMIER**

One of the most consistent patterns in business is the failure of leading companies to stay at the top of their industries when technologies or markets change. Why is it that established companies invest aggressively--and successfully--in the technologies necessary to retain their current customers but then fail to make the technological investments that customers of the future will demand? The fundamental reason is that leading companies succumb to one of the most popular, and valuable, management dogmas: they stay close to their customers.

Drawdown Project. Review the sectors and list of solutions at this site: www.Drawdown.org. Click "View Solutions" button and then examine any sector that you wish. The most innovative ideas are in the sector called "Coming Attractions."

Study questions:

1. What is meant by "disruptive technology" in popular discussion? Is that the same as what is meant in the article?
2. What were the differences between Blockbuster's and Netflix's business models?
3. What competitive advantages does Netflix have, and do they carry over to streaming?
4. Did Hastings make the right move in trying to separate the DVD-by-mail business from the streaming business?
5. Which of the ideas in Drawdown.org appear to be disruptive technologies, and how do you think they may evolve?

Thursday, 2/13

Climate as an Innovation Challenge

Required readings:

***Climate Change in 2018: Implications for Business* IN HBR CASE PACKET**

Rebecca M. Henderson, Sophus A. Reinert, Polina Dekhtyar, Amram Migdal

This note provides general information about climate change and its implications for business. Included is an overview of climate change science and a number of its impacts, including rising sea levels, changing weather patterns and extreme weather, pressure on water and food, political and security risks, human health risks, and impact on wildlife and ecosystems. Next, responses to climate change are outlined, including improvements in energy efficiency, moving away from fossil fuels, changes in land use and agriculture practices, and geoengineering. The note concludes with the debate over who should pay and how much should be spent to mitigate and adapt to climate change and the implications for the private sector.

Drawdown Project. Review the sectors and list of solutions at this site: www.Drawdown.org. Click “View Solutions” button and then examine any sector that you wish. **Please focus on the innovative ideas are in the sector called “Coming Attractions.”**

Study questions:

1. What are the most important business questions in climate change?
2. What are the innovation challenges in dealing with climate change?
3. How do you think our economy and our financial system will respond to these challenges?
4. Which of these innovation challenges would you like to study?

TEAM PREZOS:

We will discuss and decide which teams will study which innovation challenge from Drawdown. Think about your preferences; no presentation is required today; that will come later.

Thursday, 2/27

Lean Business Development

Required readings:

Rent the Runway, Thomas R. Eisenmann; Laura Winig [IN HBR CASE PACKET](#)

Two months after a successful launch In November 2009, the cofounders of Rent the Runway (RTR), a website that rented designer dresses, are debating whether to grow their startup at a measured pace and focus on improving operational effectiveness, or raise a new round of venture capital sooner than originally planned. Raising more venture capital would allow RTR to aggressively expand its inventory and customer acquisition efforts, in order serve a broader range of customer segments with a wider selection of products, (e.g., accessories, maternity wear).

Why the Lean Start-Up Changes Everything (HBR article), Steven G. Blank [IN HBR CASE PACKET AS "OPTIONAL" – ALSO AVAILABLE ON BUSINESS SOURCE PREMIER](#)

In the past few years, a new methodology for launching companies, called "the lean start-up," has begun to replace the old regimen. Traditionally, a venture's founders would write a business plan, complete with a five-year forecast, use it to raise money, and then go into "stealth mode" to develop their offerings, all without getting much feedback from the people they intended to sell to. Lean start-ups, in contrast, begin by searching for a business model. They test, revise, and discard hypotheses, continually gathering customer feedback and rapidly iterating on and reengineering their products.

Study questions:

1. Create a timeline of actions taken by Runway's founders. Do you agree with the decisions they made along the way?
2. Which actions were important in validating the business model and in refining the concept?
3. Can you suggest different actions that they could have taken?

Midterm Evaluation

Tuesday, 3/3

Not a class, but be on the lookout: I will email the exam case to you.

If for any reason you cannot receive the email in this way, talk to me beforehand. You will need this case in order to do take the exam the following day. The exam itself is open-book; bring the case itself to the exam.

Thursday, 3/5 12.30-2.30

Midterm exam (in normal class time and place)

You will be asked to answer 2-3 questions about the situation in the case; please bring the case with you, but do not hand in the case. You will get exam booklets to use and that is the only material you should hand in. Exam is 2hrs and there is no class after that.

Note: Paper outline due in next class! See p. 8 of this syllabus for description of the paper project and the outline that you will hand in.

Thursday, 3/12

Intellectual Property Strategies

Required Paper outline due: *Please hand in a 1-2 page outline of your proposed final paper topic, stating the key issues you will address, the main evidence you will use, and your conceptual approach (see p. 8 of this syllabus).*

Required readings:

Intellectual Ventures, Andrei Hagiu; David B. Yoffie; Alison Berkley Wagonfeld **IN HBR CASE PACKET**

Intellectual Ventures creates and acquires intellectual property, which it then seeks to monetize through non-exclusive licensing. In early 2009, as an increasing number of companies were trying to position themselves as leading intermediaries in the market for intellectual property, IV was looking for the best business model to become such a leading intermediary. Its model was predicated on making it easy for small inventors to monetize their inventions and IP (by selling it to IV) and then using its scale and aggregate IP portfolio to extract revenues from potential licensees (usually technology companies).

Study questions:

1. Why is the market for patents so illiquid and inefficient today?
2. Does Intellectual Ventures (IV) have the right strategy to solve the market inefficiencies?
3. Which players in the patent market like IV and which don't?
4. Think about the projects you are involved in, or have been, in this course or elsewhere. What is the role of intellectual property in these projects?

TEAM PREZOS:

Selected teams will present on innovation challenges in their assigned business. Assignments TBD. Presentations will be short and to the point – 20min including Q&A. Presentation will be counted as part of class participation in second half of the course.

Thursday, 3/19

Cyber Innovation

Required readings:

Bitcoin: The Future of Digital Payments? Andrei Hagiu; Nathan Beach **IN HBR CASE PACKET**

This case is an introduction to how block chain works. You are welcome to do your own digging to find out more about this. Our objective is not to understand how radical innovations in communication and computation can disrupt existing industries. Where else is this happening?

Fintech in Capital Markets (Boston Consulting Group report), Morel et al

AVAILABLE ONLINE HERE:

<https://www.bcgperspectives.com/content/articles/financial-institutions-technology-digital-fintech-in-capital-markets/#chapter1>

The financial technology (fintech) phenomenon first started to evolve in the capital markets (CM) industry more than 40 years ago. Today, accelerated both by the electronification of trading in the 1990s and the subsequent thrust of the entire financial services industry toward digitization, fintech — which we define as firms that use innovative technology at scale to either enable or compete with other financial institutions—have experienced exponential growth.

Study questions:

1. How does Bitcoin work? What are its advantages and disadvantages?
2. Can blockchain technology be useful in other markets?
3. How might blockchain and digital currencies disrupt markets? Which markets?

TEAM PREZOS:

Selected teams will present on innovation challenges in their assigned business. Assignments TBD. Presentations will be short and to the point – 20min including Q&A. Presentation will be counted as part of class participation in second half of the course.

Thursday, 3/26

Architectural Innovation

Required readings:

Mobileye: The Future of Driverless Cars, David B. Yoffie **IN HBR CASE PACKET**

Mobileye was an Israeli company, officially headquartered in The Netherlands, which was a Tier 2 supplier to the global automobile industry. After 15 years of building a leading technology for autonomous driving systems, Mobileye emerged in 2014 as one of the most exciting companies in the race for the driverless car. After going public in August 2014, the company looked set to become the de facto standard for vision-based autonomous and ultimately self-driving cars.

The Innovation-Driven Disruption of the Automotive Value Chain (Parts 1, 2, 3), Evangelos Simoudis
AVAILABLE ONLINE HERE:

<https://corporate-innovation.co/2015/04/06/the-innovation-driven-disruption-of-the-automotive-value-chain-part-1/>

In the next 10 years we will create more innovations that will impact the automotive industry than we have created in the previous 100. These innovations will be embraced because of certain important problems that must be addressed and will couple technology with other forms of innovation. Because of the disruptive innovations that were introduced to the market in the last 3-4 years, and the ones that will be introduced in the near future, particularly those relating to the electric-autonomous-connected car, the automotive industry is approaching a tipping point of disruption.

Study questions:

1. What are MobilEye's competitive advantages? And what are its competitive vulnerabilities?
2. How should they handle the OEM demands for lower prices?
3. Compare MobilEye's strategy with Intel's discussed earlier in the course. Will MobilEye be able to repeat Intel's success?

TEAM PREZOS:

Selected teams will present on innovation challenges in their assigned business. Assignments TBD. Presentations will be short and to the point – 20min including Q&A. Presentation will be counted as part of class participation in second half of the course.

Thursday, 4/2

Climate Interactive Simulation Game

You will participate together with other students in a simulated negotiation of global climate accords.

Details TBD.

See: <https://www.climateinteractive.org/>

Tuesday (Brandeis Thursday), 4/7

The Business of Climate Change

We will discuss what we learned during climate week, in various courses.

TEAM PREZOS (if needed):

Selected teams will present on innovation challenges in their assigned business. Assignments TBD. Presentations will be short and to the point – 20min including Q&A. Presentation will be counted as part of class participation in second half of the course.

Thursday, 4/23

Innovation Ethics

We will discuss how technology is shaping our future as a society, and whether and how we should regulate that evolution.

Assignment TBD.

Final Paper

Monday, 5/4 Final papers of GRADUATING STUDENTS are due

Monday, 5/11 Final papers for ALL OTHER STUDENTS are due

All papers should be in PDF format and contain all text and exhibits (i.e. please do not send separate documents or spreadsheets). Submit to bgc@brandeis.edu before midnight of the due date.

See pp. 8-9 of this syllabus for paper requirements and suggested content. Unexcused late submissions will be penalized. If you have a good reason for missing this deadline, you will need to get an “Incomplete” from me *before* this date.

Remember to reference your sources properly. Improperly references papers will be returned ungraded and may be subject to disciplinary action. If you have any doubts about our standards of Academic Integrity or the processes by which these are enforced, see materials presented at IBS Orientation.

Course requirements differ; in this course, the minimum you should cite are:

- All direct quotes and verbatim text
- All major ideas and arguments
- All graphics, charts, and data series (if you compile a chart or calculate a series, say where the raw data is from and say what you did)
- Any text taken verbatim from the web or another source
- Major portions of text that are paraphrased or drawn from another source

Selected Bibliography

These books are all recommended as background, or as general education in the field of technology strategy and innovation. We will try to put most of them on Reserve at Goldfarb Library; they are readily available on Amazon.com, often at deep discounts for used versions. (Two books that may be useful as “text-booky” surveys are in bold below.)

Burgelman, Robert, Christensen, Calyton, and Wheelwright, Steven. *Strategic Management of Technology and Innovation*. New York: McGraw-Hill, 2004.

Choudary, Sangreeta Paul. *Platform Scale*. Platform Thinking Labs, 2015.

Cusumano, Michael, Annabelle Gawer, and David Yoffie. *The Business of Platforms*. New York: Harper Collins, 2019.

Ebert, Ronald and Griffin, Ricky. *Business Essentials*, any edition (Englewood Cliffs, NJ: Prentice Hall, 1999. (This is a good general introduction to business functions, and can serve as brush-up reading, if you feel that is useful in your study.)

Evans, David and Schmalensee, Richard. *Catalyst Code: The Strategies Behind the World’s Most Dynamic Companies*. Boston: HBS Press, 2007.

Gomes-Casseres, Benjamin. *Remix Strategy; The Three Laws of Business Combinations*. Boston: HBR Press, 2015.

Kelly, Kevin. *What Technology Wants*. New York: Penguin, 2010.

Kelly, Kevin. *The Inevitable: Understanding the 12 Technological Forces That Will Shape Our Future*. New York: Viking Press, 2016.

Lessig, Lawrence. *Code and Other Laws of Cyberspace*. New York: Basic Books, 1999.

Osterwalder, Alexander and Pigneur, Yves. *Business Model Generation*. New York: Wiley, 2010.

Parker, Geoffrey, Marshall Van Alstyne, and Sangreeta Paul Choudary. *Platform Revolution*. New York: Norton & Co., 2016.

Shapiro, Carl and Varian, Hal. *Information Rules: A Strategic Guide to the Network Economy*. Boston: HBS Press, 1999.

Shane, Scott. *Technology Strategy for Managers and Entrepreneurs*. London: Pearson, 2013. (This is a good general introduction to tech strategy issues, and can serve as a textbook for the concepts in this course, if you feel that is useful in your study.)

Sundararajan, Arun. *The Sharing Economy: The End of Employment and the Rise of Crowd-Based Capitalism*. Cambridge, MA: MIT Press, 2016.

Vullings, Ramon and Heleven, Marc. *Not Invented Here: Cross Industry Innovation*. Amsterdam: BIS Publishers, 2015.

Yoffie, David and Cusumano, Michael. *Strategy Rules: Five Timeless Lessons From Bill Gates, Andy Grove, and Steve Jobs*. New York: Harper Collins, 2015.

Zuboff, Shoshana. *The Age of Surveillance Capitalism*. New York: Public Affairs, 2019.