I. COURSE OVERVIEW

This course aims to present the most current concepts and frameworks necessary for an effective management of Innovation and New Product Development (NPD) in a range of different industries. The course will focus primarily on the commercialization of novel technology and products as opposed to the management of R&D activities themselves. We will also focus on mechanisms for the implementation and monetization of ideas rather than their generation.

II. EDUCATIONAL OBJECTIVES

• Understand the importance of technology in delivering a more sustainable future for business
• Understand different types of innovations and the implications of how to capture the value from these innovations
• Apply existing tools of innovation management to offer new solutions to complex problems or to create new opportunities
• Identify all relevant stakeholders and propose solutions that take into account multiple interests in the context of innovation
• Be innovative in developing business solutions

III. COURSE CONTENTS

The purpose of this course is to introduce and explore the concepts of Innovation Management and NPD. Particular emphasis is placed on the need to view innovation as a
management process that often links internal processes with external sources of information and innovation – Innovation and NPD cannot be separated from wider social and market processes.

The cases used in this course cover a wide range of topics. We will start mapping the innovation landscape by looking into a historical case that describes the development of the first self-powered plane by the Wright brothers. Building on this basic understanding of innovation processes and the interplay of various actors and institutions we will focus on innovation and NPD within a firm. The case of LEGO, for instance, illustrates the importance of aligning innovation processes with the general strategy of the firm, whereas the development and introduction of the Nespresso coffee system by Nestlé shows that large companies, in particular, struggle to commercialize groundbreaking new products.

In addition to these general discussions of the management of innovation, technology strategy and NPD processes within organizations, we will also focus on topics of particular relevance in today’s world of fast-paced changes of the competitive landscape. For instance, we will discuss the role of intellectual property rights (e.g., patents) for innovation and the commercialization of inventions. Additionally, we discuss the challenges of focusing on developing products for the digital economy that often exhibit characteristics of 2-sided markets and/or rely on novel business models such as “freemium” pricing. In these settings, the existence of network effects aggravates the problem of finding a big customer base fast. Finally, we also look into the question how to micro-manage teams in the innovation process.

IV. TEACHING METHOD AND APPROACH

Case studies: We will use them to discuss issues facing firms in all of the areas covered. For each case study, I will indicate a series of questions to be addressed. Participants are expected to come fully prepared, having studied the case thoroughly and knowing its content and issues.

Lectures: Lectures will either aim to present concepts and frameworks and their applications, or help consolidate the learning following a class discussion, e.g. based on a case study.

Simulations: A simulation will be used to allow getting you some experience in managing teams in the context of NPD in order to understand key drivers of team performance.

Readings: As a complement to teaching, I will generally provide the class with a series of articles and book abstracts (from different sources) that present the most important concepts and methods. If you wish to have more references, do not hesitate to ask.
V. GRADING

The evaluation will be primarily based on written assignments as well as on class participation.

Case write-ups (2 case write-ups: 35% each)

On two occasions, participants will be requested to write a short paper in class (in 20 minutes) in response to a question about the assigned case study of the day or a concept / framework studied in previous sessions. Clear, unambiguous, straightforward responses based on sound argument(s), using appropriate concepts or frameworks presented in the course, are expected. The main purpose of the case study write-up is to extend proficiency beyond geographical, cultural and organizational confines and to demonstrate your ability to be innovative in developing business solutions.

The case write-ups are not announced beforehand. Please be ready for them at any time.

Class participation (30%)

The main purpose of class participation is to demonstrate your acquisition of the knowledge and understanding developed in this course, and in particular your ability to identify all relevant stakeholders and propose solutions that take into account multiple interests. It is not just to “get a good grade”. It is also, perhaps more importantly, to help the learning of the whole class. This may come as questions to the faculty for clarification, contribution to the understanding of issues being discussed, or responses to questions raised by other participants. Therefore, participants are all expected to contribute in this perspective, but also avoid excessive participation that might limit the involvement of other, less talkative, less easy, colleagues. The feedback to participants will be consistent with this perspective.

For some of the sessions, there will be a group assignment for which group members will have to prepare a small presentation on an issue faced by the case study protagonist(s). Participants will then be invited to present the findings of their group in class. The main purpose of these assignments, which are graded as part of the class participation item, is to modify existing tools to offer new solutions to complex problems or to create new opportunities.
VI. REQUIRED TEXT AND OTHER COURSE MATERIALS

Session 1
Wednesday, January 10, 2018
15:00–17:00

Session topic: **Introduction: innovation and industry evolution**

In the introductory session of the course, we will have a look at the emergence of novel technologies and the interaction of various parties involved driving the emergence and evolution of a whole industry. Using a historical case, we will further discuss how the value of a technological innovation can be appropriated and analyze the determinants of appropriation.


Required reading: none

Optional readings:

Study questions
1. What technological bottlenecks needed to be resolved for manned flight to become a realistic possibility?
2. How would you characterize the process of technological discovery leading to the development of the Wright Brothers’ flying machine?
3. Why did the Wright Brothers patent? Was this justifiable? For them? For the industry?
4. What were the main types of actors involved in the innovation process?

Session 2
Wednesday, January 10, 2018
17:30–19:30

Session topic: **Aligning external environment and internal innovation strategy**

Similar to a company’s overall strategy its innovation strategy needs to align external developments and internal goals and plans. In this session we discuss to what extent the toolkit of strategic planning can be applied to the development of an innovation strategy and whether and how it needs to be adjusted.

Case (to prepare): Merck & Co, Inc. (McGraw Hill MH0035)

Strategy available at https://cb.hbsp.harvard.edu/cbmp/product/3441BC-PDF-ENG

Optional reading: None

Study questions

1. What does the structure of the pharmaceutical industry look like according to Porter’s five forces? Is it an attractive industry – why or why not?
2. Looking at Merck’s strengths, weaknesses, opportunities and threats – determine if Merck can gain and sustain a competitive advantage. Why or why not?
3. Analyze Merck’s innovation strategy – does it need fixing?
4. Can open innovation help Merck to meet the customers’ needs in a cost-effective and creative way that also brings value to its shareholders?
5. Is the acquisition of Idenix an appropriate response to competition in the HCV market?

Sessions 3 & 4
Thursday, January 11, 2018
08:30-13:00

Session topic | Innovation governance: managing innovation and technology strategy within an organization
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Virtually all innovation, certainly major technological innovations such as electronics, pharmaceutical or automobile products, occurs within organizations. Moreover, successful new products have the added benefit of revitalizing companies. In this session, we therefore focus on the management of innovation and new product development within the firm. We will see that this is a multi-faceted topic and no single approach provides all the answers.


Optional reading: None

Study questions

Innovation should be an integral part of a company’s strategy. While Lego certainly agrees to this proposal, the process of managing innovation has led it to the brink of bankruptcy and requires a redesign. When thinking about the following questions take Lego as an example but try to answer from a more general perspective.

1. What is the context in which the innovations at LEGO take place? Are the innovations more driven by consumers (pull) or by the company /LEGO (push) and what are the implications for the management of the innovation process?
2. What are the key elements in a generic innovation process?
How would you implement these elements if you were Knudstorp?

3. LEGO has adopted a stage-gate process in their innovation process to monitor and control the development of new products. What are challenges in designing a functioning stage-gate process? You can build on your experience if you worked with stage-gate processes before.

Sessions 5 & 6
Thursday, January 11, 2018
14:30-18:30

Session topic

Innovation and renovation: challenges of product commercialization in established organizations

Corporate venturing comprises processes aimed at creating new businesses, products, services or processes inside an existing organization to create value and generate new revenue growth. Using Nespresso as an example of a technological novelty and a marketing innovation we will discuss the challenges for an established corporation to accommodate innovative activities leading to new products. Moreover, we will discuss the importance of pursuing new approaches for corporations active in established and mature markets.

Case (to prepare):


Required reading:

Optional readings:


Study questions

1. What is Nespresso?

2. Review the history of Nespresso’s development and commercialization. What were the important turning points?

3. What could explain Nestlé’s decision to reach outside its large managerial cadre and hire Lang? How do you assess him as a manager and innovator?

4. In general, what are the big challenges in pursuing a corporate venturing approach as in the Nestlé example?

5. Optional: After 2010 Nestlé gradually lost the patents surrounding the Nespresso system which led to an increased competition by third-party capsules. What can Nestlé do to defend its market?
**Sessions 7 & 8**  
Friday, January 12, 2018  
08:30–13:00

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<th>Session topic</th>
<th>Teradyne Corporation: the Jaguar Project - Simulating Project Management</th>
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<td>This session examines the implementation of project management tools for the NPD process using the example of Teradyne Corporation. A discussion of available project management tools and approaches allows the participants not only to understand the benefits and usefulness of project management processes but also to potential unintended consequences of the introduction and implementation of such tools. The case based discussion will be complemented by a computer-based simulation of important drivers in the management of NPD projects.</td>
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**Study questions**  
1. Compare and contrast Teradyne’s traditional project execution strategy to the approach they used in Jaguar. What was similar? What was different?  
2. What impact did the project management tools have on the Jaguar project? Specifically, how did they change the behavior? How did they influence performance?  
3. What were the unintended consequences of using the project management tools? What lessons should Teradyne take away from the Jaguar project? 

**Sessions 9 & 10**  
Friday, January 12, 2018  
14:30-18:30

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<th>Session topic</th>
<th>Developing products and services for the online economy – Freemium</th>
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<td>This session focuses on new business models based on the so-called freemium model. Using the example of dropbox, we not only discuss the economics underlying freemium models but also look into the application of “lean start-up” management practices. This includes</td>
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reliance on a minimum viable product (MVP), A/B testing to optimize product design and marketing strategy as well as business model innovations.

In the context of this session, we will also discuss how the existence of network effects affects strategies for product development.


• Business Model Analysis for Entrepreneurs. HBS 812-096

Study questions
1. Compare Facebook and Google+. From your perspective, why didn’t Google+ catch up with Facebook in any major market? Can you remember MySpace.com?
2. Assess Lindsay’s vision of Cork’d as a two-sided network. What value do wineries bring users? Do users bring wineries? Do users bring each other?
3. Beyond the fees, why might a winery be reluctant to join Cork’d? An individual user? What, if anything, could Cork’d do to address this reluctance?
4. Do you agree with Cork’d’s decision to charge the wineries a fee of 999,- USD?

Sessions 11 & 12
Saturday, January 13, 2018
8:30-13:00

Session topic The market for technology I – Licensing in the pharmaceutical industry
Many successful innovations are not commercialized by the inventor but are sold on the market for technology to another party that (after further developing the initial idea) takes the innovation to the market. In this session we will have a closer look at the product development process in the pharmaceutical industry and discuss the importance of in-licensing for large pharmaceutical companies. This includes an in-depth discussion of licensing deals that are typically struck in this industry.

Case (to prepare): Licensing of APOEP1.B Peptide Technology. (Ivey 905N16)


Study questions

1. What are major factors which a university technology transfer office should take into account in the operation of their unit?
2. Identify the key criteria which should be taken into account in the designing of an out-licensing agreement from the point of view of a university technology transfer unit?
3. Which of the two proposed deals would you recommend to the university?
4. The case takes the perspective of a university technology transfer unit. Imagine you work for a large pharmaceutical company and that you are responsible for a whole portfolio of collaborations. What are the broad dimensions that you could use to structure your collaboration portfolio?

Session 13
Saturday, January 13, 2018
14:00-17:00

Session topic
The market for technology II – What do you get for a patent?
We look at the different economics created by the interaction of complex products that require access to a large number of technologies and the economics of cross-licensing deals. In these settings often patent thickets emerge that create a further challenge for the commercialization of new products in these industries.

Case (to prepare): none
Required readings:
Optional reading: none
Study questions none