**BA in Management Program
 Fall 2020**

**MGMT404 – Technology Management**

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**Office Hours:** By appointment

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| --- | --- | --- | --- |
| **Type** | **Time** | **Days** | **Where** |
| Class | 10:40 am – 12:30 pm | M | FASS 2119/2128-online |
| Class | 08:40 am – 09:30 pm | T | FASS 2119/2128-online |

**Course Objective:**

This course is designed to meet the needs of future managers, entrepreneurs, consultants, and investors who must understand the dynamics and develop business strategies in technology-based industries. The focus is on learning conceptual models and frameworks that will help navigate the complexity and dynamism in such industries, as well as tools that will enable effective management of the development and utilization of technologies and new products. The course explores how technological innovation diffuses and affects the competitive dynamics of markets, and how firms can strategically manage these dynamics to create and sustain competitive advantages. It does so by first analyzing the sources of technological change and identifying sources of competitive advantage from both industry and firm-level perspectives. It then examines the mechanisms for leveraging and extracting value from technologies.

**Learning outcomes:**

Upon successful completion of the course, the student should be able to:

1. Understand the foundations and implications of the dynamics of innovation, technology evolution, adaption, and diffusion.
2. Identify the technological environment within which a firm does or wants to operate.
3. Use a range of research and decision-making tools for creating, selecting, and implementing new technologies and products.
4. Describe the primary tasks and decisions that are required to turn a technological innovation into a sound business opportunity.
5. Analyze firm strategies in high technology environments and design strategies that are more likely to bring competitive advantage.
6. Know different types of organizational structures and human resources practices that firms can use to innovate and appropriate value from their technology.

**Course Material:**

See below the required and optional materials list for each week. Unless otherwise stated, chapters in the list refer to the main course book (e-book available). I expect you to at least skim through the materials for the week before the class and fully read the cases before we discuss them in class.

Main course book: Shane, Scott A. (2013). Technology Strategy for Managers and Entrepreneurs: Pearson New International Edition. Pearson Education Limited

**Week 1:** Introduction and course overview (5&6 Oct)

**Week 2:** Technology evolution (12&13 Oct)

Main material:

* Chp 1, 2

**Week 3:** Technology adoption and diffusion (19&20 Oct)

Main material:

* Chp 3

**Week 4:** Innovation, R&D (26&27 Oct)

Main material:

* Chp 4

Supplementary material:

* Kahn, K. B. (2018). Understanding Innovation, Harvard Business Publishing

**Week 5:** Evaluating Innovation Projects (2&3 Nov)

Main material:

* Chp 4, 5
* Kim, W.C., Mauborgne, R., Chen, G., Olenick, M. (2018). Driving the Future: How Autonomous Vehicles Will Change Industries and Strategy, Harvard Business Publishing

Supplementary material:

* Tesla Autonomy Day with Elon Musk - Best of in 23 minutes <https://www.youtube.com/watch?v=Vd0_jh53DEI>
* Tushman, M. L., O'Reilly, C. A. (2004) Ambidextrous Organization (HBR OnPoint Enhanced Edition) Harvard Business Publishing

**Week 6:** Understanding market needs (9&10 Nov)

Main material:

* Chp 6

**Week 7:** Product development (16&17 Nov)

Main material:

* Chp 7
* Case: Maccormack, A., D’Angelo, E. (2005). Activision: The Kelly Slater’s Pro Surfer Project, Harvard Business Publishing.

Supplementary material:

* Üçler, Ç., Vayvay, Ö., Çobanoğlu, E. (2006). Customer-focused product development and a case study in Turkish refrigerator market, İstanbul Ticaret Üniversitesi Fen Bilimleri Dergisi

**Week 8:** Managing intellectual property (23&24 Nov)

Main material:

* Chp 8, 9

Supplementary material:

* Kauffman Foundation (2015). How Intellectual Property Can Help or Hinder Innovation
* Kurt Eichenwald (2014). The Great Smartphone War, Vanity Fair (June, 2014)

**Week 9:** Technical Standards (30 Nov&1 Dec)

Main material:

* Chp 12

**Week 10:** Competitive advantage and technology (7&8 Dec)

Main material:

* Chp 10, 11

Supplementary material:

* Yaprak, A., Yosun, T., Cetindamar, D. (2018). The influence of firm-specific and country-specific advantages in the internationalization of emerging market firms: Evidence from Turkey, International Business Review. 27(1): 198-207.
* Pinkse, J., Bohnsack, R. (2017). Value propositions for disruptive technologies: reconfiguration tactics in the case of electric vehicles, Harvard Business Publishing

**Week 11:** Simulation (14&15 Dec)

**Week 12:** Technology roadmapping (21&22 Dec)

Main material:

* Phaal, R., Farrukh, C., Probert, D. (2001). Technology Roadmapping: Linking Technology Resources to Business Objectives, University of Cambridge. 1-18.
* Case: Xie, R. S., Sia, S. K., Neo, B. S. (2017). Fintech and Finance Transformation: The Rise of Ant Financial, Harvard Business Publishing.

Supplementary material:

* Gine, M., Anton, M. (2018). How Big Data, AI and Blockchain Are Changing Finance: The Fintech Revolution, Harvard Business Publishing.

**Week 13:** Organizing and managing human resources for technology (28&29 Dec)

Main material:

* Chp 15, 16
* Case: Beer, M., Shelton, R. (2012) BoldFlash: Cross-Functional Challenges in the Mobile Division, Harvard Business Publishing.

**Week 14:** Team project presentations (4&5 Jan)

**Course Web:**

The main meeting point for the course is Zoom. The Zoom link for the course will be sent to registered students before the first session.

Readings will be available on SuCourse+ and your Harvard Business Publishing Coursepack at the beginning of the semester. Lecture slides will also be uploaded after each class. Detailed information on your team project and any updates on course content and schedule will be announced on SuCourse+. The students should upload their assignments using SuCourse+.

Sabancı University uses a very powerful web-based tool called Turnitin. Turnitin is the worldwide standard in online plagiarism prevention. It allows instructors to compare student papers against a database composed of millions of articles. Every paper you submit will be scanned by Turnitin, and results will be reflected in your grades.

**Instructional Design:**

The course will be taught with an interactive, experiential, and critical thinking approach using a variety of tools and methods, some of which are listed below:

Guest speakers:

Devrim Özaydın, Global Technology Director of Kordsa

Savaş Yürekli, Principal at DefineX Consulting Technology Labs

Erdem İnanç, Sabancı University Co-Space manager

Appsilon Enterprise team

Simulation:

Strategic Innovation Simulation: Back Bay Battery (v3),

Harvard Business Publishing, by Clayton M. Christensen & Willy Shih

Cases:

Activision: The Kelly Slater’s Pro Surfer Project, HBP

Fintech and Finance Transformation: The Rise of Ant Financial, HBP

BoldFlash: Cross-Functional Challenges in the Mobile Division, HBP

Online tools:

Zoom

Tophat.com

Course’s Forum on SuCourse+

**Grading**:

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| --- | --- |
| Attendance | : 5% |
| Participation | : 12% |
| Individual assignment | : 12% |
| Quizzes | : 9% |
| Simulation exercise | : 7% |
| Team project | : 30%  |
| Final exam | : 25% |

**Requirements:**

**Attendance (5%):** Attendance will be taken each class hour via online tools. Students need to write their names within the stated time period in each hour. Arbitrary checks will be done to ensure the students are online after signing the attendance.

**Participation (12%):** Participation refers to actual contribution to the learning. Inputs to discussions, asking questions, comments, and responses to questions by the instructor, and reactions to your classmates’ arguments are examples to participation. Reading the required material for the week and thinking on the topic before the class are essential for high quality participation. During the online sessions, students can either unmute themselves to talk or write comments/questions in the Zoom chatbox. We will also use Tophat for some in-class discussions. In addition, we will actively use the forum at the course’s SuCourse+ page in and out of class hours, and inputs to the forum also count for participation.

**Individual assignment (12%):** ln this assignment, students will write an essay on a new technology of their choice (7 points) and present it to the class (5 points). The essay (2-4 pages) will cover a brief explanation of the new technology and its existing&/potential product applications, as well as answering some questions related to topics covered in the course. Student will make 5 minute presentations of their essay on Week 9 (Dec 1). Detailed guidelines for the assignment will be available on SuCourse+ page.

**Simulation (7%):** There will be a simulation exercise on Week 11 (Dec 14). Before the day of the simulation, read the instruction documents those will be delivered to you and activate your account on Harvard Business Publishing. After the simulation, students will answer short questions testing how seriously they played the simulation, their takeaways, and their ability to link the subject to the course content.

**Quizzes (9%):** There will be 3 quizzes, each equaling 3 points. Below are the details:

Quiz 1: Oct 26, 10:45 AM. Covers content of week 2&3.

Quiz 2: Nov 9, 10:45 AM. Covers content of week 4&5.

Quiz 3: Nov 23, 10:45 AM. Covers content of week 6&7.

**Final exam (25%):** The final exam will cover all term’s content. The lecture slides are considered part of the course content, including the content in the slides that may be coming from resources other than your required readings. There will be both multiple choice and essay type questions in the exam, some of which will evaluate your critical thinking on the topics as well as your capability to apply them to business cases. A make-up for the exam will only be possible if you have a valid health report.

**Team Project (30%)**: The team project is intended to have you apply the theories and concepts learnt throughout the term as well as developing your research and analytical thinking skills. The project outputs are a project report and the project presentation. There will be teams of at most 3 students, each team ideally including at least one management and one FENS students. Teams should be formed until Week 3 and the teams should picked their companies by Week 4. There will be in-class facilitation on these weeks to place the students without teams and to fix the cases for the teams.

Your project report will be covering a case study of a firm, some analysis using some tools we covered in class, and your recommendations on technology roadmap. To ease your access to data, the teams will select their case firms from the companies listed in Borsa İstanbul. Teams cannot select same firms or firms from same industries. The list of companies in Borsa İstanbul by sectors and the detailed project guidelines will be available on SuCourse+.

The reports should be delivered in word (docx) files using Times New Roman (1.5 space) and should not exceed 30 pages including the references. The due date for submitting the first part of your project is Week 12 and the full project is due Week 14 (Jan 4). You will be making 10-minute presentations of your team project on Jan 4. The report and presentation should be uploaded to SuCourse+ before the class. Each team member should have a substantial role in the presentation, and you are free to use any presentation tool and material.

Peer Evaluation in Teamwork : Students will be asked to provide an evaluation of the members of their team for their team project. Each student will divide 100 points between the members of her team, including herself. This division should reflect that person’s judgment of the contribution of the members of her team. The scores should not be merely functions of time spent by each member, but they should be measures of the "contribution;" their relative contribution to the idea generation, research, analysis, writing, oral presentation, report writing, etc. If the team was highly functional, and each member did what they committed themselves to, then the student can assign the same mark to each member of the team. If, on the other hand, some members of the team did not fulfill their commitments and did not contribute as much as the others, then points can be distributed unevenly. The points submitted by all members of the team will be aggregated by the instructor. Every student will be given his/her aggregate peer evaluation, without disclosing the individual peer evaluations to the students. In case there is no consensus among the team, for example, if three students divide the marks evenly and the fourth one divides them unevenly, then the instructor will use his/her judgment to assign peer evaluation marks--possibly after meeting with the members of the team. In cases where there are conflicting marks, it is most likely that the instructor will meet with the team members and provide a mark based on an interview. For example, in a group of four, if Students A and B believe they did most of the work, and Students C and D believe otherwise, the team may be called in for an interview in order to be fair to everyone. The peer evaluation will have a direct impact on your team project grade. To give a simple example, if the group mark is 25 out of 30, and if your peer evaluation indicates that your contribution was less than what was expected, then your team project mark will be less than 25 out of 30.

**Academic Honesty:**

Learning is enhanced through cooperation and as such you are encouraged to work in groups, ask for and give help freely in all appropriate settings. At the same time, as a matter of personal integrity, you should only represent your own work as yours. Any work that is submitted to be evaluated in this class should be an original piece of writing, presenting your ideas in your own words. Everything you borrow from books, articles, or web sites (including those in the syllabus) should be properly cited. Although you are encouraged to discuss your ideas with others (including your friends in the class), it is important that you do not share your writing (slides, MS Excel files, reports, etc.) with anyone. Using ideas, text and other intellectual property developed by someone else while claiming it is your original work is *plagiarism*. Copying from others or providing answers or information, written or oral, to others is *cheating*. Unauthorized help from another person or having someone else write one’s paper or assignment is *collusion*.

Cheating, plagiarism and collusion are serious offenses that can result in an F grade and disciplinary action.

**Class policies and conduct**

* Come prepared to make helpful comments and ask questions that facilitate your own understanding and that of your classmates.
* Make sure you are in a good, quiet working environment and that your cameras and microphones function properly.
* Join the class on time and open your cameras.
* Mute yourself if you are not talking and listen to the person who has the floor.
* Use your technological devices for watching and listening the session and participating to the course during the online sessions, NOT for personal purposes.

**Course Schedule:**

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| **Week 1** | **Dates:** | **5&6 Oct** |
| Topic: | Introduction and course overview |
| Requirements: |   |
| **Week 2** | **Dates:** | **12&13 Oct** |
| Topic: | Technology evolution |
| Requirements: |   |
| **Week 3** | **Dates:** | **19&20 Oct** |
| Topic: | Technology adoption, diffusion |
| Requirements: | Team formation |
| **Week 4** | **Dates:** | **26&27 Oct** |
| Topic: | Innovation, R&D |
| Requirements: | Teams' case selection, Quiz1 (26 Oct) |
| **Week 5** | **Dates:** | **2&3 Nov** |
| Topic: | Evaluating R&D projects |
| Requirements: |   |
| **Week 6** | **Dates:** | **9&10 Nov** |
| Topic: | Understanding market needs |
| Requirements: |  Quiz2 (9 Nov) |
| **Week 7** | **Dates:** | **16&17 Nov** |
| Topic: | Product development |
| Requirements: |   |
| **Week 8** | **Dates:** | **23&24 Nov** |
| Topic: | Managing intellectual property |
| Requirements: |  Quiz3 (23 Nov) |
| **Week 9** | **Dates:** | **30 Nov&1 Dec** |
| Topic: | Technical standards |
| Requirements: | Individual assignment presentations |
| **Week 10** | **Dates:** | **7&8 Dec** |
| Topic: | Competitive advantage and technology |
| Requirements: |   |
| **Week 11** | **Dates:** | **14&15 Dec** |
| Topic: | Simulation exercise |
| Requirements: | Read the instructions for simulation |
| **Week 12** | **Dates:** | **21&22 Dec** |
| Topic: | Technology roadmapping |
| Requirements: | Delivering 1st part of team project |
| **Week 13** | **Dates:** | **28&29 Dec** |
| Topic: | Organizing and managing HR for technology |
| Requirements: |   |
| **Week 14** | **Dates:** | **4&5 Jan** |
| Topic: | Group project presentations |
| Requirements: | Delivering and presenting team projects |