Course Syllabus

ISOM1380/CORE1340 Technology and Innovation: Social and Business Perspectives

- Summer semester 2024/25
- Class Hours: Monday/Wednesday & Friday 2:00-6:00PM
- Classroom: 2465
- Instructor: Prof. Xu Yan
- Office: 4074 (LSK); E-mail: xuyan@ust.hk; Office Phone: 2358 7640
- Teaching Assistant: TBC
- Office hours by appointment

Course Description

The technology and innovation management is playing an increasingly important role in enhancing the competitiveness of countries, firms and individuals. This course will provide an overview of the technology and innovation management from strategic perspectives. Students taking this course will understand the fundamentals of technology and innovation strategy and management. They will also obtain knowledge on policy and regulatory issues, such as national innovation system. At the end, participants will acquire a set of powerful analytical tools which are critical for formulating a technology and innovation strategy as an integral part of business strategy.

As innovation refers to the full process from idea generation to the successful commercial launch of the product, people seeking for successful career development should have good understanding of the technology and innovation management both from the technical perspectives and from the business perspectives. In this context, this course is useful for students from every school.

Learning Outcomes

On successful completion of this course, students will be able to

- recall and state fundamentals of technology and innovation strategy
- explain and interpret strategies taken by each individual company
- analyze and evaluate the strengths and weaknesses of each individual strategy
- produce part of a strategy using a set of powerful analytical tools
- develop teamwork skills, deliver an effective report and presentation in English

Teaching Approach

- Introducing the basic concepts on technology and innovation strategy in lectures
- Using practical examples to interpret and illustrate strategies taken by companies
- Introducing a certain analyzing tools for decision-making. Exercises will be assigned to students on how to use these tools
- Conducting a certain comprehensive case studies and assigning a team project

Assessment Scheme

- The mid-term assignment and the final exam will include multi-choice and filling the blanks questions so as to test if student can recall or state knowledge of the fundamentals
- In addition to multi-choice and filling the blanks questions, part of the short questions in the mid-term assignment and the final exam are designed to test student's ability to explain and interpret technology and innovation strategies
- The team project and part of the short questions in the mid-term assignment and final exam are designed to test students' ability to produce part of a business strategy by using analyzing tools
- The team project report, group presentation and part of the short questions in the mid-term assignment and final examinations are used to test student's ability in analyzing and evaluating strengths and weaknesses of each individual strategy

Students will be graded on the basis of

a) a mid-term exam (covering the first four lectures) (30%);
b) a project presentation (20%);
c) a project essay (20%);
d) a final exam (covering the last four lectures) (30%).

Student Learning Resources

As the coverage of the lecture is very extensive, no textbook will be suggested while some readings will be assigned throughout the course.

The following book which is downloadable for free will be used for reference:

- Eric von Hippel (2005) *Democratizing Innovation*, MIT Press, downloadable for free from http://web.mit.edu/evhippel/www/democ1.htm

Schedule:

June 16: **Introduction**

Handout:

1. **Reading 1** - Xu Yan and YU Chun (2023) Innovation for Hong Kong's Upward Social Mobility, HKUST Business School, Chapter I, II, III

June 18: **Economic Implications of Technology and Innovation**

Handout:

1. **Reading 2** – Economic Doctrine
2. **Reading 3 -** Xu Yan and Min Gong (2003) "National Innovation System and Its Implications for 3G Development in China", *Communications and Strategies*, No. 52, 2003, pp. 155-174 (Handouts)

References:

1. Michael E. Porter (1998) "What is Strategy?" Chapter 2 in Michael E. Porter (1998) *On Competition*, A Harvard Business Review Book

June 18: **Add/Drop Deadline**

June 20: **Strategic Decision Making –Basic Decisions**

Handout:

1. **Reading 4** - Hirotaka Takeuchi, "Fast Retailing Group", Harvard Business School Case (9-711-496)

References:

1. Michael E. Porter (1998) "How Competitive Forces Shape Strategy??" Chapter 1 in Michael E. Porter (1998) *On Competition*, A Harvard Business Review Book

2. James M. Utterback (1994) "Innovation and Industrial Evolution", Chapter 10 in Murray R. Millson and David Wilemon (2007) *The Strategy of Managing Innovation and Technology* Prentice Hall;

June 23: **Production Innovation Process and Portfolio Management/Technology Life Cycles and S Curves**

Handouts:

1. **Reading 5** - Robert G Cooper and Michael S. Mills (2005) Succeeding at New Product Development the P&G way: A key element is using the "Innovation Diamond"
2. **Reading 6** - Robert G. Cooper, Scott J. Edgett and Elko J. Kleinschmidt, Portfolio management
3. **Reading 7** – IBM EBO Case

References:

1. Margaret A. White and Garry D. Bruton (2007) The Management of Technology and Innovation, Thomson South-Western, Appendix Three: Managing Platforms and Portfolios of Technology
2. Joseph L. Bower and Clayton M. Christensen (1995) "Disruptive Technologies: Catching the Wave" Chapter 53 in Murray R. Millson and David Wilemon (2007) *The Strategy of Managing Innovation and Technology,* Prentice Hall;

June 25: **Open Innovation; Intellectual Property Management**

Handout:

1. **Reading 8** – Xu Yan and Minyi Huang, "Leveraging University Research within the Context of Open Innovation: The Case of Huawei", *Telecommunications Policy,* 46, 2, 2022, 101956
2. **Reading 9** - Xu Yan and Yu Chun, "Strengths and Weaknesses of Hong Kong's Technology and Innovation Industry with reference to the Extended Open Innovation Model", *Journal of Science and Technology Policy in China*, 4, 3, 2013, 180-194

References:

1. Henry Chesbrough (2003) "The Logic of Open Innovation: Managing Intellectual Property", Chapter 66 in Murray R. Millson and David Wilemon (2007) *The Strategy of Managing Innovation and Technology,* Prentice Hall;
2. Chapter 5, From Closed to Open Innovation—The Transformation of the IBM Corporation, Chesbrough, Henry: Open Innovation: The New Imperative for Creating and Profiting from Technology, Harvard Business School Press, Boston (MA) 2003 *(Available on Line from HKUST Library website)*
3. Michael A. Cusumano. Yiorgos Mylonadis, and Richard S. Rosenbloom (1992) "Strategic Maneuvering and Mass-market Dynamics: The Triumph of VHS over BETA", Chapter 25 in Murray R. Millson and David Wilemon (2007) *The Strategy of Managing Innovation and Technology*, Prentice Hall;
4. Margaret A. White and Garry D. Bruton (2007) *The Management of Technology and Innovation,* Thomson South-Western Chapter 6 Pages 210-221

June 27: **User Innovation – Democracy of Innovation**

References:

1. Eric Von Hippel (2005) *Democratizing Innovation*, MIT Press, downloadable for free from http://web.mit.edu/evhippel/www/democ1.htm, Chapter 1

June 30: **No Lecture; Preparing for the mid-term examination**

July 2: **Mid-term Examination** (Coverage: The first four lecture)

July 4: **No Lecture; Preparing for team project**

July 7: **The Adoption of Innovation**
Handout:
1. **Reading 10** - Xu Yan, Min Gong and James Y.L. Thong (2006) "Two Tales of One Service: User Acceptance of Short Message Service (SMS) in Hong Kong and China", Info, Vol. 8, No. 1, 2006, pp.16-28

References:
1. Everett M. Rogers (1995) "Elements of Diffusion", Chapter 13 in Murray R. Millson and David Wilemon (2007) *The Strategy of Managing Innovation and Technology,* Prentice Hall;
2. Schoshana Zuboff and James Maxmin (2002) The Support Economy : Why Corporations are Failing Individuals and the Next Episode of Capitalism

July 9: **Project Presentation**

July 11: **Final Examination** (Coverage: The last three lectures)

Academic Honesty

The Hong Kong University of Science and Technology is a community designed for scholarship — for teaching, learning and research.

Academic integrity and honesty are critical values in upholding HKUST's reputation as a community of scholars and its claim to the "intellectual property" created by staff and students. All students who join HKUST are committed to an Academic Honor Code.

All staff and students should be aware of the regulations that deal with academic integrity and honesty and work together to maintain the highest standards.

For details, please visit https://registry.hkust.edu.hk/resource-library/regulations-student-conduct-and-academic-integrity

Learning Environment

For general guidelines about proper classroom conduct, please refer to:
https://registry.hkust.edu.hk/resource-library/regulations-student-conduct-and-academic-integrity