Transfer of New Technologies into the Economy

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Course Contents:

This course main aim is to allow students to acquire the learning outcomes to be able to simulate and to manage the process of transferring new technology into the market.

The course is divided into two parts. The first part of the course, Diffusion of innovation, focuses on the simulation of the transferring process. Students will learn how to propose and analyze different dissemination models to understand the evolution of the transfer of new technology and innovations into the economy. These models are intended to be useful to design the management strategies that can help in the diffusion endeavor. Prof. Francesc Miralles and Carla Riverola are going to coordinate the first part of the course that will be held from Feb 10th to March 19th.
The second part of the course, Knowledge Economy and Knowledge Transfer, provides an in-depth study of the knowledge economy, and how knowledge and technology is transferred among different institutions in order to create economic activity. Using a strategic perspective, the course aims to develop a sound high-level understanding of the relationship between the knowledge generating organizations and persons, and the institutions generating wealth out of this knowledge: enterprises.

This part of the course learning process is based also on the study of well-known real cases of both successful and unsuccessful knowledge and technology transfer processes. Prof. Xavier Castillo, will deliver this part of the course from March 31th to May 28th.

COMPETENCES:

- Development of written and oral communication skills.
- Development of Information management skills.
- Teamwork.
- A search for quality excellence.
- Self-Motivation.

LEARNING OUTCOMES:

By the end of the course, students should be able to:

- Understand how diffusion of innovation process works
- Identify the different phases of the technology adoption life cycle and the adopter patterns
- Collect and read data on the diffusion of innovations from different sources
- Implement a simulation strategy for diffusion models using Excel
- Determine the characteristics of an innovation
- Identify the different adopter patterns and their characteristics
- Identify the different adopter´s decision stages
- Understand the problems in characterizing the Knowledge Economy

- Know the limitations of the Knowledge Economy indicators
- Understand the advantages and limitations of the patent system
- Know the different Technology Transfer models
- Look for Technology Markets
- Understand the role of Mentoring
- Understand the impact of current International Trade Agreements on Knowledge Transfer

AGENDA FOR THE SESSIONS: Below you can find a tentative schedule, subject to change if needed. I believe that activity and reflection are important parts of the learning process. Therefore, every single session you will be provided with readings, take-home exercises or activities or an assignment for the following session.

Week 1 Introduction to the Course
Technology adoption life cycle and S-curve

Week 2 Diffusion models

Week 3 Roger´s framework

Week 4 Crossing the chasm
Leapfrogging

Week 5 Use & Gratifications
Quitters & Resistance

Week 6 Closure of Part I of the course
Review of the Part I of the course
Presentation of the final project of Part I of the course

Week 7 MIDTERMS (Final exam Part I)

Week 8 Definitions. Knowledge Economy.
How different countries position their industries. World Bank Knowledge Assessment
Methodology: Knowledge Economy Index. US (Apple) vs. Germany (BMW).

Week 9 The Lisbon Strategy and Schumpeter´s Creative Destruction Theory.
EU Innovation Union Scoreboard

Week 10 Easter Break

Week 11 & 12 National Innovation Systems
Definition. Main actors. The Secret History of Silicon Valley.

Week 13 Intellectual Property.
The MP3 case. Problems with patents. Open Source Software

Week 14 Technology Transfer
The Bayh-Dole Act. Licensing vs Newco creation.

Week 15 Accelerating Technology Transfer. The Entrepreneurial state.

Week 16 Summary of Part II
Methodology - The course is divided into two parts:

The Part I of the course allows a first contact with concepts around the diffusion of the innovation and the associated simulation models, the process of simulation using models, and the understanding of the forces that can affect the diffusion.

The methodological approach and the pedagogical tools will be entirely supported by the elearning platform (eStudy) and will be intended to provide a comprehensive learning experience. For each topic, a combination of the following tools will be used:
- Lectures   Students will be presented with contents about the major topics covered in the course. Active participation is expected from students.
- Discussion exercises   Questionnaires and exercises will be held in order to reinforce the concepts of the session. Therefore, students are expected to discuss about the main issues of each topic.
- Lab sessions   Some lab sessions will be scheduled to provide substantive support on the learning process of the simulation techniques and models and to assure the progress of the students´ Final Project.
- Final Project   A final project will be held by students in order to demonstrate their ability to compute and understand diffusion models
- Readings   A list of recommended books and papers is provided in the present document for further understanding of the main topics.
- Web 2.0 discussions   Learning outcomes can be acquired through many different pedagogical tools. Students will be provided with a focused discussion blog to facilitate and foster their learning experience.

The second part of the course is divided in 6 different topics, each focusing on a different aspect of New Technology transfer into the Economy. For each topic, a combination of the following will be used:
- Lectures   Students will be presented with contents about the major topics covered in the course.
- Weekly Assignments   Assignments will be given BEFORE each topic is presented. Therefore, students are not expected to provide a right or wrong answer for each assignment, but are expected to think about the main issues of each topic.
- Class discussions   Many cases will be discussed through the course. Maximum benefit for the student will be obtained only if each case has been prepared by previously doing the corresponding weekly assignment.
- Readings   A list of recommended books and papers is provided in the present document. In addition, other sources may be referred during the course.
- Videos   When available, relevant videos will also be viewed, as additional materials for the class discussions.
- A real case will also be studied.

EVALUATION:

The Course grade will be based on the assessment of each one of the parts of the course.

Each part of the course has the same weight on the final grade.

The Course grade will be based on the following point breakdown:

Part I
- 35%: Individual assignments, class attendance and participation. This part of the evaluation is based on the participation of the students at class and on web 2.0 tools.
- 25%: Final Project
- 40%: Final Exam

Part II

- 50%: individual weekly assignments and class discussions. This part of the evaluation is based on the participation of the students at class. Therefore, their attendance and preparation of the weekly assignments is equally important.
- 50%: Final Exam

Point breakdown for the retake exam is the same as in the regular basis

Prerequisite to pass this course:

In order to pass the course, students must pass each part.
Presentation of the Final project of part I is a must!
A minimum of 30% is required to pass each exam (midterm & final exam)

Bibliography

All compulsory material will be provided through the eStudy with specific guidelines for each topic.

Complementary information can be found in the following references:

Part I:
Rogers, E.M., Diffusion of Innovations, 4th Ed., The Free Press, New York, 1995
Schumpeter, J., The Theory of Economic Development, Harvard University Press, Cambridge, MA., 1934
Moore, Geoffrey A. Crossing the Chasm. New York: HarperCollins, 2002.
Kim, M. & Kim, H. 2004, "Innovation diffusion of telecommunications: General patterns, diffusion clusters and differences by technological attribute", International Journal of Innovation Management., vol. 8, pp. 223-241.
Stafford, T.F. 2003, "Differentiating between adopter categories in the uses and gratifications for Internet services", Engineering Management, IEEE Transactions on, vol. 50, no. 4, pp. 427-435.
Teng, J.T.C., Grover, V. & Guttler, W. 2002, "Information technology innovations: general diffusion patterns and its relationships to innovation characteristics", Engineering Management, IEEE Transactions on, vol. 49, no. 1, pp. 13-27.

Part II:
The Knowledge-Based Economy, OECD, 1996