List of Courses (Description of Courses)

ITM501   Innovation Management
This course intends to provides multi-methodological approach to multi-faceted issues concerning on Innovation Management. In short, we will examine the chain of value creation in the market through commercialization of new technology and also the success factors of those activates. We will study this topic both in theory and practices.

ITM502   Entrepreneurship
This course aims to prepare students to develop the knowledge, skills, and mind-set that will support and enhance their entrepreneurial activities in a startup or a corporate setting, by exposing them to a diverse group of entrepreneurs, their real life stories, and their genuine motivation.

ITM503   Managerial Economics for Technology Management
This course is concerned with the understanding of basic principles in business economics. Business economics considers how individuals, firms, the government, and other organizations make choices. In addition, economic forces are a fundamental determinant of firms' profitability and growth, and economic thinking should be a fundamental influence in nearly every managerial decision. In this course, we will examine the principles of microeconomics, and illustrate how they apply to managerial decision-making. By the end of semester, students should understand the main logical arguments in business economics and be able to use these tools to analyze business and public policy problems.

ITM504   Finance and Accounting for Technology Management
This course is to provide the basic knowledge of the finance and the managerial accounting, essential to understanding the business performance, and to making proper business decision to maximize the financial return.   The subjects include, but not limited to, understanding finical statements, project valuation, cost behaviors, and budgeting. As a basic course for I&TM, this course is designed to offer comprehensive understanding of accounting subjects.

ITM505   Marketing Management for Technology Management
This course examines the process of strategic marketing management and considers its role within organizations. It presents the fundamentals of the marketing concept and considers the relationship between the marketing concept and other concepts such as innovation and entrepreneurship. The course considers tools and methods used to examine marketing environments, understand consumer and organizational buying behavior, segment markets and position products, develop new products, manage existing products and promote, price and place products. Numerous case study assignments will also be a part of the course.

ITM511   Statistical Analysis
This course covers the concepts and techniques concerning exploratory data analysis, frequency distributions, central tendency and variation, probability, sampling, inference, regression, and correlation. Students will be exposed to these topics and how each applies to and can be used in the business environment. Students will master problem solving using both manual computations and statistical software. At the end of the class, students will be

able to analyze relevant data using contemporary computer-based technology and apply the results to make decisions concerning the specific question or problem.

ITM512 Data Analysis with Open Software

This course introduces students to various statistical techniques that economists use for estimating, testing, and forecasting economic relationships. The objective of this course is to provide students with the tools required to evaluate and to carry out empirical research. The course starts with introducing some basic regression models, and then moves on to cover more advanced topics in panel data and time series analysis. Frontier research papers with various economic data sets will be covered, which will help the course practical and useful.

ITM520 Information & Communication Technology Foresight

The pace of the technology progress in the information and communications industry will continue to increase. This is a very large, dynamic industry with many different types of players involved in the industry, driving innovations in many directions. In this class, the students will gain technology and business foresight from the perspectives of service providers, enterprises, end-users, and vendors.

ITM521 IT Applications Foresight

In this class, we will focus on IT software, applications, and services in the enterprise environment. There will be a focus toward acquiring new ICT foresight about various technologies in the context of the current business models and other existing technologies. the students are expected to gain deep insights about many forward-looking technologies. The fundamentals of ICT software, applications, and, services will be introduced so that the students understand key technology concepts and, speak "technology language."

ITM522 Communications Network Foresight

In this class, we will focus on the evolution of communications networks and future trends. Many of the competing technologies will be examined in terms of major external factors including economics, vendors' interests, standard bodies, government initiatives, etc.. the students are expected to gain deep insights about many forward-looking technologies."The students take an active role in the learning process through class discussions and presentations.

ITM523 Artificial Intelligence Patent Strategy

This will provide current situation and issues of the AI Patent Strategy of Global top players. Students will learn (1) what kind of AI Patents have been filed, (2) how to apply for AI Patents and (3) how to find AI Patent idea. All students have to apply for one AI Patent during the class period.

TM525 Bio-Medical Technology Foresight

This Bio-Medical Technology Course provides in-depth review of the broad range of up-to-date bio-medical technologies. Based on deeper understanding on such technologies, students can get insights on how to continue to foster innovation and to ensure safety and effectiveness of future bio-medical technologies in order to bring improved outcomes from the utilization of those technologies.

ITM526 Bio Technology Foresight

This course is to promote basic knowledge and understanding prior to being engaged in a variety of Bio subject researches. There will be a focus toward acquiring new Bio technology foresight about various technologies in the context of the current business models and other existing technologies. The fundamentals of Genes, RNA and services will be introduced so that the students understand key technology concepts and speak "technology language."

ITM530 Energy, Environment, Water, and Sustainability Technology Foresight

This course focuses on the technological and cost "fundamentals" of emerging energy technologies, including solar, wind, biomass, oceanic, geothermal, hydropower, fuel cell (hydrogen), nuclear, and other more exotic energy sources. A premise of the course is that a sustainable energy technology must both be technically feasible and economically viable. We consequently investigate the technological promise and progress of each technology, as well as its economic opportunities and challenges. At the conclusion of the course, students will have a solid technical and economic understanding of these energy technologies.

ITM531 Nano-Convergence Technology Business Foresight (NTB)

In this class, students will gain the foresight of the nano technology as a platform technology from many different perspectives: nano-based technology business (commercialization) opportunities including idea, invention, intellectual properties, initiatives, and incorporation. It is believed that the best way to engage students to learn and be excited about technology foresight is through our special class projects including making idea for the real start-up companies based on the nano convergence technologies.

ITM532 Environment Technology Foresight

This course is designed to learn introductory concepts on environmental technology under the context of global collaboration. Professors from Daejeon campus will deliver lectures and workshops on environmental policy, international collaboration, and development of environmental technology. Especially, potential solutions are proposed for the inter-connected problems of energy, environment, water, and sustainability which are global agenda in the 21st century and should be solved collaboratively.

ITM533 NANO Technology Foresight

Nanotechnology become merged with diverse disciplines and it play a key role. The objective of this course is to provide the understanding of physics and chemistry in nanoscale and the applications to material, electrical engineering, mechanical engineering, and bioengineering.

ITM534 Convergence Technology Foresight

This course introduces the convergence technology among IT, BT, ET, and NT technologies. The basic principle of the convergence will be studied, and their industrial applications and technology trends are also dealt with some cases.

ITM540 Strategy for Innovative Business

This class introduces the students to the core concepts of strategic management for technology-intensive industries. The topics covered in the class include: external and internal analysis, value chain, different levels of strategies, acquisitions, outsourcing, organic growth strategy through innovation, platform strategy, and pricing strategy. There will be both

group projects and individual assignments. By doing projects and assignments, the students will be able to internalize the understanding of the strategic frameworks by applying to key technology-intensive industries of the future. The instructors will challenge the students to participate in the class discussions and to share ideas through case studies and group discussion exercises.

ITM550   Finance for Technology Management

This course studies financial subjects that are essential to manage the technology organization. The subject covers valuation of assets, risk management, risk return tradeoff, corporate financing, derivatives, and venture capital. This course provides comprehensive understanding of modern financial system as well.

ITM560   Leadership for Innovative Organization

Ultimately, the goal of managers and leaders is to get things done in organizations. Most of that work is accomplished by effectively managing human and social capital. Using cases, exercises, and readings, we will focus on the skills and tools managers need to be successful in today's rapidly changing, dynamic, and innovative organizations.

ITM561   Negotiation and Communication

Negotiation and Communication is a hands-on, skill-oriented class which addresses two topics of central importance to anyone who seeks to succeed or to survive, in an organizational environment. The concepts presented in the course are introduced to prepare for or reflect on the succession of exercises or simulations.

ITM565   License Agreement

Overview of general contract theory, basics of license agreement and preparation of license agreements. Students will learn how characteristics of individual IP affect actual license agreements.

ITM567   M&A and Corporate Restructuring

Understanding of legal principles relating to expansion, down-sizing and other structural changes, which are necessitated by change in circumstances of corporate management

ITM570   Process and Operations Management

This course studies the essential concept and cases to manage the business process and operation efficiently and effectively. Broad issues of scheduling and planning, supply chain management, and project management are all considered in a concise integrated manner.

ITM580   Survey of Intellectual Property and Business Law

This course covers the broad range of IP topics and selected business law issues. Students will gain a basic understanding on the principal modes of legal protection for intellectual work under patent, copyright, trademark, and trade secret. Students will also learn about legal issues on business formation and management, securities regulation, and shareholders' rights and liabilities. Furthermore, students will be familiarized with contractual agreements, theories and types of product liability, and employment issues. This course is intended to help students become a smart user of legal services in general. It is also intended to be particularly helpful to students who want to be a IP manager in an organization.

ITM590 Data-driven Technology Strategy Development

This course aims to learn how to use various patent DBs and analyze technology trends based on patents, and experiences the process of developing actual technology strategies with the data-based analysis.

ITM601 Research Methodologies I

This course provides basic knowledge of academic research for graduate students. This course covers diverse topics associated with academic research, including conceptualizing a research design, literature review, identifying variables, constructing hypotheses, data collection, instrument development, sampling, empirical analysis, etc. At the end of this semester, each student will complete a piece of his/her own international-conference-level paper in his/her field.

ITM610 Formation and Implementation of Entrepreneurial Ventures

This course centers on writing a comprehensive business plan and implementation plan for a venture of students' choice. Teams of 3 ~ 4 students will work on the development of a business plan. It will allow students to acquire the knowledge and skill set necessary for developing and writing a coherent and effective plan to start a business, in either a startup or a corporate setting.

ITM620 Technology Commercialization Practice

This course is designed to provide students with theoretical and practical knowledge of technology commercialization within companies, universities, spin-offs, and standalone start-ups through a case-based approach, guest speaker's experiences, and a term-length project, will enhance their understanding of various business approaches and experiences related, so they have an opportunity to adopt the perspective of a CEO/founder or decision maker.

ITM621 R&D Planning and TRM

This course aims to approach the design process from a broader business perspective. Beyond the traditional role of industrial design and designers, this project attempts to include developing business strategy as a design problem. By investigating and analyzing the market, company structure and business model, students engage in managerial decision-making process to develop business strategies.

ITM622 Value Innovation – Theory and Practice

This course is to learn dynamics and paradigms of innovation using multiple case studies. This course aims to make the students get familiar with key concepts such as the evolution path, the diffusion pattern, the value capture, and the implementation of the innovation, so that they become more effective in creating and nurturing innovation that is a crucial value creating engine in modern society.

ITM630 Asia Innovation and Policy

This course examines the relationship between innovation and competitiveness at the firm(esp. MNC) and country levels and evaluates how innovation policies regarding R&D, human resource development, technology financing, innovation cluster, and high-tech SMEs etc., are being gradually reshaped in the current context of the globalization of a knowledge-driven economy.

ITM631 Open Innovation Strategy
This course intends to investigate the real life cases of open innovation, which has emerged as new innovation paradigm at global scale. We will follow the reason why open innovation occurred in some firms but not in others. Specifically, we will approach this issue in light of innovation habitat.

ITM633 The Knowledge Industry
This course will provide concepts, methodologies and issues of the Knowledge Industry. Students will learn : (1) basic technologies (2) current issues of the knowledge industry and (3) how to design the business model on the basis of forecasting the industry's future.

ITM634 Innovation Ecosystem
This course will provide special concepts, methods and issues on innovation ecosystem at national as well as regional level. Students can foster their capability of managing innovation ecosystem through some examples which have developed in venture business, IT industry and Daedeok Innopolis.

ITM635 Entrepreneurial law
Overview of legal issues arising in connection with establishment, operation and divestment (exit) of venture company

ITM636 Service innovation in Industries
This course will provide concepts, methodologies and issues of the Service innovation in industries such as manufacturing, distribution, IT and others. Students will learn: (1) basic technologies (2) best practice of the service innovation in industries and (3) how to design the service.

ITM637 Territorial Perspective on Innovation System
This course is divided into two categories. First, through the study of the relationship between innovation and path dependency on the basis of technological, institutional, and regional perspectives, we will review various theoretical approaches of innovation process particularly in terms of territorial dimension such as national and regional innovation systems, innovation cluster, venture business ecosystem, etc. And then, finally we will discuss the matter of policy intervention in the process of innovation through the cases of industrial policy and innovation policy in Korea.

ITM638 Policy Studies for Innovation
This course will provide students with concepts, models and issues on innovation policy, based upon recent studies. The course will focus on policies and systems related to research and development, intellectual property rights, cultivation of researcher and innovator, collaboration between industry and university, regional innovation and venture business. The course will investigate and analyze how OECD and developed countries recommend and choose policies to spur innovation.

ITM640 Integrated Perspective of New Product Development
The development of new products (goods or services) is an intensively cross-functional process. This course examines that process from the classical marketing perspective with

operations, finance, organizational policy, and strategic planning.

ITM655 Big Data Analytics for Business Planning

This course wishes to prepare you for data-based decision in your business. Especially to support data driven-decision making to your business, we study Big data analytics /Machine Learning methodology, so that find out internal/external business insight from data. This course consists of big data analytics algorithms /method theory, and hands on practices with python2, 3, Graphlab, Pandas, kaggle, etc.

ITM660 Strategic Management of High-Tech Innovation

This course covers issues related with high-tech industry including marketing strategy. High-tech industry requires concrete understanding of consumers from the stage of ideation of a product till that of marketing strategy setting because of its industry characteristics of high cost and market risk. From this course, students study innovation issues in high-tech industry and related marketing strategy.

ITM661 Corporate Strategic New Product Development

This course aims to approach the design process from a broader business perspective. Beyond the traditional role of industrial design and designers, this project attempts to include developing business strategy as a design problem. By investigating and analyzing the market, company structure and business model, students engage in managerial decision-making process to develop business strategies.

ITM662 Architecture Innovation and Monozukuri

This course will provide special concepts and industrial cases on Architectural Innovation and Monozukuri theory which have been developed mainly in Japan since late 1990's. Monozukuri literally means not only 'making goods and services' in Japanese, but also 'highly advanced manufacturing skills including spirits of labors, inter-firm cooperation'. Architecture and Monozukuri aspects are useful to explain the performance of Japanese firm's competitiveness overcoming China's rapid catch up. Students can improve their understandings about product development and industrial competition issues in Korea, Japan and China.

ITM664 Industry Value Chain and Company Development

Research on industry value chain is an important field of industrial innovation and competitiveness analysis. But it has been quite difficult for a long time because of lack of in-depth statistics and inter-firm business informations in Korea. In this class students and I will try to apply Company DB to industry map and analyze the evolution path/pattern of an industry in Korea.

ITM666 Advanced Innovation Seminar

This course is for students, with knowledge in major required courses, who want to study innovation in more depth. The students will study each contents of Introduction to Innovation Management in depth and read relevant papers to present/discuss with classmates every class. This will allow students to be familiar with the papers in the field of innovation and to practice presenting to fellow colleagues in academics.

ITM668 Qualitative Research Methodology in Innovation Study
This course is divided into two levels. First, we will practice to make a research proposal including research aim, research objectives, research questions, and methodology. In case of methodology, considering the title of this subject, qualitative methods, particularly method of interview will be used and relating methodological issues will be reviewed.
Second, we will do a simple real interview according to the above research proposal, and try to suggest research findings from this interview. In this level, interview design and interview data analysis would be the main target of this practice.

ITM671 Energy, Environment, Water and Sustainability Technology Foresight
This course focuses on World & Korean ENERGY market and its trend. Most of all, we will study about EEWS Technology, including solar, wind, biomass, hydropower, fuel cell (hydrogen), nuclear, and other exotic energy sources. Through this technology roadmap and world market trend, students will get an insight of how Korean energy market can survive.

ITM672 Nano-Convergence Technology Business Foresight (NTB)
In this class, students will gain the knowledge and foresight of nano technology and its convergence technology from many different perspectives: nano-based commercialization/tech-biz opportunities including vendors, service providers, enterprises, end-users, and government. This means that the students will learn about not only the past, current and future technology trends, but also their impact on the businesses and users. The fundamentals of nano technology will be introduced in the class. There will be several outstanding instructors for this class to cover a wide range of topics in nano technology. It is believed that the best way to engage students to learn and be excited about technology trends is through our special class projects including making the real start-up companies with the nano tec-biz idea from several presentations of their findings, and class discussions. The class environment is informal and designed to encourage class participation and close interaction between instructors and students.

ITM675 Startup Valuation and Venture Investment Practices
This course helps you understand the principle and practice of venture investment among various entrepreneurial financing mechanism through venture investment vehicle, investment method, term sheet, startup valuation, case study on real venture investment, etc.

ITM680 Case Development in Technology Management
The purpose of this course is to introduce you to the emerging trends and issues in technology management through case study and practice of technology management tool. Through this course, students learn how to think to solve practical problems through the analysis of most recent technology management issues and tools to achieve the goals of the firm and government.

ITM700 Technology Commercialization Design and Customer Development
This course is to wrap up various courses and knowledge offered by the graduate school of Innovation and Technology management. Students will design value creation system and actual implementation process of a chosen technology with KAIST faculty's help. The final presentation and the poster session will be held and the formal final report will be submitted.

ITM701 Advanced Econometrics
Topics to be studied include specification, estimation, and inference in the context of models that include then extend beyond the standard linear multiple regression framework. After a review of the linear model, we will develop the asymptotic distribution theory necessary for analysis of generalized linear and nonlinear models. We will then turn to instrumental variables, maximum likelihood, GMM, and two step estimation methods. Inference techniques will be extended to include Wald, Lagrange multiplier and likelihood ratio tests. Modelling frameworks will include the linear regression model and extensions to models for panel data, multiple equation models.

ITM702 Research Methodology II
This class try to achieve in-depth understanding of the high level research methodologies which should be essential in writing empirical dissertation paper and conducting various researches in the field of business. The class covers empirical design focussing validities, and multivariate data analyses including ANOVA, Factor Analysis, Regression, Discriminant Analysis, Conjoint Analysis, Multidimensional Scaling, Structural Equation. etc.

ITM800 Special Topics(3) in Management of Technology
This course is designed to let the graduate students understand the state-of-the-art research activities in management of technology for I&TM and have them participate in the research though individual projects.

ITM801 Special Topics(1) in Management of Technology
This course is designed to let the graduate students understand the state-of-the-art research activities in management of technology for I&TM and have them participate in the research though individual projects.

ITM802 Special Topics(2) in Management of Technology
This course is designed to let the graduate students understand the state-of-the-art research activities in management of technology for I&TM and have them participate in the research though individual projects.

ITM805 Special Topics(3) in Entrepreneurship
This course is to promote basic knowledge and understanding prior to being engaged in a variety of Innovation and Technology management, especially on Entrepreneurship. There will be a focus toward acquiring new technology to foresight about values in the context of the current Management of Technologies.

ITM806 Special Topics(3) in Strategy & Marketing
This course is to promote basic knowledge and understanding prior to being engaged in a variety of Innovation and Technology management, especially on Strategy & Marketing. There will be a focus toward acquiring new technology to foresight about various technologies in the context of the current business models and other existing technologies.

ITM807 Special Topics(3) in Commercialization
This course is to promote basic knowledge and understanding prior to being engaged in a variety of Innovation and Technology management, especially on Commercialization subject. There will be a focus toward acquiring new technology and foresight about various

technologies in the context of the current business models and other existing technologies.

ITM812 Special Topics on High-technology
This course is designed for students to be responsive to quickly-changing global innovation by learning the compelling issues behind regarding high-tech trend and market. All the
information and lecture plan will be disclosed in advance.

ITM960 M.S. Thesis Research
This is research credit for preparing Master's dissertation.

ITM965 Individual/ Group Study in M.S.
This is research credit for independent study

ITM980 Ph.D. Dissertation Research
This course is for the doctor's degree thesis based on independent research work performed by he candidate in the laboratory of the advisory professor

ITM985 Individual/Group Study in Ph.D.
This is research credit for independent study

ITM991 Internship Program I
An internship work experience is intended to help you apply your formal classroom education to "real world" work experience. The work assignment must be related to the your area of interest and may be conducted within business or industry, the public or private sector.

ITM993 Internship Program II
An internship work experience is intended to help you apply your formal classroom education to "real world" work experience. The work assignment must be related to the your area of interest and may be conducted within business or industry, the public or private sector.

ITM995 International Internship
An global internship work experience is intended to help you apply your formal classroom education to "real world and global" work experience. The work assignment must be related to the your area of interest and may be conducted within business or industry outside of Korea.