Descriptions of Courses

EML501   Introduction to e-Manufacturing
The course introduces innovation strategies, models, solutions, and implementation methods for manufacturing businesses based on the internet and information technologies. Definition and scope of e-Manufacturing will be clarified. For each process included in e-Manufacturing, currently available information system and technology trend will be explored.

EML502   Business Information System
This course introduces architectures and functions of enterprise information systems for integrating and managing business processes of manufacturing enterprises, and teaches process modeling, best practices, and system configuration and implementation based on major information system solutions. Among the enterprise information systems, focus will be given to ERP and Workflow system.

EML503   Industrial Information Technology
The course introduces fundamental information technologies for developing and implementing enterprise information systems / industrial information systems.

EML504   Innovative Learning and Knowledge Creation
The course introduces modeling and analysis of creative learning process including knowledge propagation using e-learning. Concrete methodology for organizational knowledge creation is another main topic of the course.

EML601   e-Manufacturing Practice
This course is to provide in-depth understanding and hands-on experience of real-life industrial information system building cases via capstone projects. Each project team of 2~3 students is required to define its own project plan based on the members' internship experiences and the knowledge acquired from EML501, and then analyze, design, and implement e-Manufacturing solution throughout the semester. Students are required to present their project plans, progresses, and results during the course.

EML966   e-Manufacturing Leadership Seminar
Industrial experts as well as other related professionals are invited to the class 1) to give presentations on e-Manufacturing issues and 2) to have discussions with the students regarding leadership issues.

IE526   IT Organization and Leadership
This course intends to provide IE graduate students with IT leadership ability. The topics in IT leadership include CIO's roles and responsibilities, IT organizational management, strategic use of IT technologies, innovation, vision, and leadership. A variety of CIO case studies will be investigated.

IE532   Simulation and System Modeling
This is an advanced course on complex system modeling and simulation. Major topics include: system modeling formalism, world views, network system modeling, next-event simulation methodology, random number generation, input modeling, output analysis and variance reduction techniques, etc. Application case studies will be conducted using commercial simulation languages.

IE551   Manufacturing System and Supply Chain
This course aims to provide analysis and design methodologies for manufacturing system and supply chain, as well as planning and execution of various manufacturing processes. Also included are the trend of manufacturing industry transformation and efficient management of supply chain. The main topics are taxonomy of manufacturing systems, evolution of manufacturing system, manufacturing and supply system modeling methodology, manufacturing information system framework, and supply chain management.

IE553   Concurrent Engineering and Product Data Management
The purpose of this course is to introduce the basic theories of concurrent engineering (CE) and the functions of PDM systems. The theories include the concept of concurrent engineering, the process of product development, the methodologies of concurrent engineering, and the cases of industrial projects. The PDM functions include document management, workflow management, product structure management, and program management.

IE639   Supply Chain Optimization

Students in this course study the issue of supply chain optimization in an integration approach of various operations research models for supporting industrial service and resource supply activities under the e-Business environment.   Major topics include flow network design of supply chain systems at strategic level, based upon which the associated sourcing, production planning, and logical routing topics are investigated at tactical level. Therewith, scheduling, inventory, and vehicle routing topics are to be integrated together in optimal manner at operational level.

IE653   Digital Manufacturing
This course handles computer technologies to design and evaluate products and manufacturing processes in virtual space.   Main topics include digital mockup, virtual prototyping, virtual manufacturing process definition, virtual plant design, manufacturing system simulation combined with its 3D models.

IE723   Supply Chain Management
The course deals with logistic processes improvement including processes between enterprises and product design, inter-business processes integration by information sharing and transmission system, logistics system design, planning methods and systems, and partnerships and strategic alliance.

CS550   Software Engineering
This course covers fundamental concepts required in developing reliable softwares in a cost-effective manner.

MAE547   Knowledge-Based Design System
Computers are replacing more of human work which require low level of intelligence.   This course covers KBDS which can be used for engineering design such as expert system, TRIZ, KMS, ontology, configuration design.   By applying basic principles, commercial systems are used for the term project.

MAE647   STEP for Electronic Commerce
e-Business is integrated with manufacturing to create new concepts such as B2B, SCM, CRM, CPC, PLM.   In this course these new technologies are introduced for the e-business in manufacturing. STEP is an ISO standard which is one of the core technologies in this development.   Hands-on experience with STEP software tools is provided.