



教學卓越計畫

Teaching Excellence and Learning Autonomy

A6-3-1 課程網頁國際化之建置－授課目標

系所：資訊管理系

學程：碩士

Course Descriptions of Graduate Program Department of Information Management

Code	Credits	Course Name	Course Description
IM5001	1	Research Methodology	The purpose of this course is to teach the students how to conduct research with systematic and scientific methods in order to achieve high quality research performance. The contents of the course include planning and design of the research, writing and evaluation of proposals, design of research methods, data gathering and analysis, and presentation of the research results. Besides the introduction to research methodology, papers related to information management will be selected as reading materials. Discussions will also be conducted aiming at using appropriate research methods for information management related research.
IM5002	2	Technical Writing	This intention of this course is to improve students' writing skills such that they can apply the methods to professional writing contexts in their scientific or managerial career path. In addition, with the emphasis on research documentation, students will be trained intensively to write high quality research proposals, reports, and papers. The main goal with this course is to provide an opportunity to write towards individual futures, so that with each assignment the students will learn how to represent themselves effectively as authorities in their field. Ethical issues will also be discussed which are always involved in professional technical writing.
IM5035	0	Speeches in Information Technology	The objective of this course is to enhance the informatics knowledge of the senior students through the seminars given by the guests invited.
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	3	Total :	
Code	Credit	Elective courses	
IM5004	3	Algorithms	In this course, we study methods for sorting, recursion, dynamic programming, greedy algorithms, ...etc. In continuation of the data structures course, we also study algorithms for balanced trees and graphs. The contents of the course are as follows: 1.Introduction

			2.Divide-and-Conquer 3.Dynamic Programming 4.Greedy Algorithm 5.Backtracking 6.Branch-and-Bound 7.Complexity Computation 8.NP Theory.
IM5006	3	Advanced Operations Research	Operations research is concerned with resource allocation and optimization problems in management. Its techniques include linear programming, non-linear programming, integer programming, dynamic programming, network, stochastic processes, queuing theory, etc. This course picks up where undergraduate OR class leaves.
IM5007	3	Advanced Database Management System	This course will introduce the advance of DBMS; especially focus on the corresponding techniques and environments.Examples are concurrency control, recovery mechanism, query processing, etc. Also discussing the distributed database, object-oriented database, spatial database, temporal database, multimedia database, and data warehousing.
IM5008	3	Cryptography	This course will introduce the basics of number theory, symmetric key/public key cryptosystem, and the security model and analysis techniques.
IM5010	3	Neural Networks and Its Applications	This course is designed to let students understand what are artificial neural network(ANN) models. Students will be guided to understand how ANN is constructed, functioned, and applied. To demonstrate the applicability of ANN, examples and projects will be used throughout the lecture.
IM5011	3	Multiple Criteria Decision Making	This course will introduce a series of multiple criteria decision making (MCDM) methods and applications. The goal of this course is to help students gain a deep practical and theoretical insight into the MCDM methods, so as to correctly apply them to solve complex decision making problems. There are two main streams of MCDM: 1. Multi-Objective Decision Making, which assumes continuous solution spaces and tries to determine optimal compromise solutions. 2. Multi-Attribute Decision Making, which solves problems with countable few decision alternatives and basically uses approaches from discrete mathematics. The main focus of this course is on the Multi-Attribute Decision Making stream and few approaches in Multi-Objective decision Making. Team works and real case studies will be emphasized in assignments and final term project.
IM5012	3	Advanced Object-Oriented Techniques	The course introduces some important object-oriented techniques such as OOA, OOD, design pattern, OODB. It will utilize a simple case study to introduce the practical and detail procedure of OOA & OOD and how to integrate design pattern and OODB techniques to this study.
IM5013	3	Data Mining	An introduction to data mining and data warehousing:

			<p>motivation and applications.</p> <p>Basic data warehousing technology: data cube methods, data warehouse construction and maintenance.</p> <p>Basic data mining techniques: characterization, association, classification, clustering, and similarity-based mining.</p> <p>Advanced data mining applications: mining relational and transaction data, mining time-related data, spatial data mining, textual data mining, multimedia data mining, visual data mining, and Web mining.</p>
IM5014	3	Knowledge Engineering	<p>This course is based on artificial intelligence system. The purpose of the course will let students have ability to transfer human knowledge to machine reasonable knowledge. The content includes: knowledge-based intelligent systems, rule-based expert system and uncertainty management, first order and high order logic, fuzzy expert model, frame-based expert system and blackboard system, case reasoning, evolutionary computation, neural network, hybrid intelligent system, data mining and knowledge discover and semantic web primer discussion.</p>
IM5015	3	Agent Systems	<p>This course will introduce agent systems and multi-agent systems. Topics will include the concept of agents and multi-agent systems, the model of agents, the interaction of agent and environment, cooperation, coordination, and negotiation of multi-agent systems.</p>
IM5016	3	Practices in Business Information Management	<p>IT and systems are increasingly recognized as an enabler of business strategies for modern enterprises. However, the planning, implementation, utilization and management of IT infrastructures and applications are posing greater challenges to these enterprises than ever before as such technological platforms and the extended enterprise environment are becoming more complex nowadays. Therefore, it is extremely critical for business managers, MIS practitioners and MIS students to have a comprehensive and thorough understanding of the relevant issues in order to properly and successfully implement and utilize IT and systems to support organizational objectives.</p>
IM5017	3	Electronic Commerce	<p>Electronic commerce (EC) is emerging as a new type of business transactions.</p> <p>To guide students into this great area of research, this course is designed to introduce students to acquainted with the past and the future development of electronic commerce, and various IT research issues that are related to the development of electronic commerce. The tentative topics to be covered</p>

			<p>in this courses are, but not limited to, the followings:</p> <ol style="list-style-type: none"> 1. The basics of EC, 2. The network infrastructure for EC, 3. Security and EC, 4. Business-to-Consumer EC 5. Business-to-Business EC and XML/EDI 6. Consumer Search and Resource Discovery 7. Introdcution to Mobile Commerce.
IM5018	3	Software Engineering	This course will cover various advanced topics of software engineering, including software development models, software project management, real time and distributed software development techniques, software testing techniques, software maintenance issues, and software re-engineering.
IM5019	3	Knowledge Management	KM is an emerging topic for an enterprise to obtain advantages and competitiveness. In this course, the fundamentals, managerial issues, and technologies of systematic, explicit, and deliberate building, renewal, and application of knowledge to maximize an enterprise' s knowledge-related effectiveness and returns from its knowledge assets will be addressed.
IM5020	3	Information Science and Technology Management	Introducing the integration and application of information technology and management such like E-Commerce, Enterprise Resource Planning, Customer Relationship Management, Electronic Data Interchange, Ubiquitous Computing, Wireless Sensor Network, Bootstrap Learning, Bioinformatics, Collaborative Commerce, etc.
IM5021	3	Advanced Management Information Systems	The major subjects of this course are as follows : Management Information System (MIS), an integrated system based on computer and information technology, provides organizations with information for supporting routine works and decision activities. Organizations are able to achieve various goals through decision-making procedures with the assistance of management information systems. This course takes representative articles from several domestic/international MIS-related journals. The objective is to study the employment of information technology, considering aspects from organizations and systems, for different levels of organizations. Topics comprise of Accounting Information Systems, Decision Support Systems, Knowledge-based Information Systems, Executive Information Systems, Market Information Systems, Production Information Systems, Financial Information Systems, Human Resource Information Systems, Information Resource Information Systems, Strategic Management Information Systems and Electronic

			Commerce. Through the discussions on MIS articles, the purpose of this course is to have an in-depth understanding about the issues, methodologies and trends of information management researches.
IM5022	3	Business Reengineering	This course introduces students to the concepts, approaches and process of business process re-engineering, and examines the impacts of IT- and electronic business-enabled process changes on modern business organizations.
IM5023	3	Collaboration E-Learning	The goal of Collaboration E-Learning is to establish a source of new knowledge for students. However, in domestic and international research regarding E-learning mainly focused on the infrastructure of computing environment but the lack of comprehension for studying. In the distant collaboration, the difference generated by different background is variant, and it is not beneficial to positive learning effect. To avoid that situation, this course focuses on the synchronization of related education theory and computing infrastructure. Based on this, we discuss the study method while people exchange knowledge in collaboration system, and build an e-learning model.
IM5025	2	Special Topics in Mobile Network	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM5027	2	Special Topics in Multimedia Application	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM5029	2	Special Topics in Integrated Information Systems	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM5030	2	Special Topics in Information Hiding Techniques	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM5032	2	Special Topics in Information Security	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM5033	2	Special Topics in Intelligent Systems	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM5034	3	Fuzzy Theory and Application	The goal of this class is to introduce the fuzzy set theory and its corresponding applications. The important topics includes logic concepts, set theory, fuzzy set theory,

			fuzzy relation, fuzzy mathematics, fuzzy logics , fuzzy inference rules, fuzzy logic control and other important theories and their applications.
IM5037	3	Hi-Tech for Information Science	In this course, we will invite the famous experts or professors to give the lectures in information technology related topics. Students will learn the trends of researches and applications for hi-tech information technology.
IM5038	3	Digital Video Processing	This course covers the fundamentals of digital video processing. Coverage includes spatio-temporal sampling, motion analysis, parametric motion models, motion-compensated filtering, and video processing operations including noise reduction, restoration, superresolution, deinterlacing and video sampling structure conversion, and compression (frame-based and object-based methods). A number of advanced topics will be covered, including video segmentation and layered video representations, watermarking, video streaming, compressed-domain video processing.
IM5039	3	Advanced Supply Chain and Logistics Management	The course is an extension from the courses related to logistics management. We will, in the course, discuss advanced topics related to supply chain managements. These advanced topics covers strategy, planning, and executing in the supply chain management. The primary goals of the course are : Introducing the knowledge and problems in the supply chain management; and Teaching students how to formulate the problems and to solve these problems by the mathematical tools in the fields of operation research and decision science.
IM6001	3	Intelligent Agent	This course will introduce all kind of technologies and methodologies utilized by intelligent systems. In addition to search, inference, and rule systems, the issues of learning and planning are included in the lecture. Students will realize how to design and build intelligent systems.
IM6002	3	Pattern Recognition	1.Bayesian decision theory. 2.Parametric estimation and supervised learning. 3.Linear discriminate functions. 4.Nonparametric methods. 5.Feature extraction for representation. 6.Feature extraction for classification. 7.Unsupervised learning and clustering.
IM6003	3	Distributed Systems	This course is aimed at discussing the topic of parallel and distributed systems. The following topics will be covered in this class: Parallel and Distributed System Architecture, Parallel and Distributed Computing, Internet Computing, Cluster Computing, Grid Computing, and Mobile Computing.
IM6004	3	Information Hiding	Two main topics will be discussed in this course: steganography and digital watermarking. There has been

			<p>a number of information hiding techniques since the development of human civilization, for example, invisible characters written with special ink, information hidden via rearrangement of the words in a seemingly normal article, and information hidden in microfilms, etc. How will these techniques be implemented in the digital era? How to transmit secret messages through the Internet without causing any notification? On the other hand, hand written signatures were usually used in the past to assert the copyrights of intellectual properties. As they are obviously infeasible for digital products, how to protect the products' integrity and copyright, especially when they can be easily modified? These types of digital problems will be fully discussed in this course. Information hiding is a new area which combines research areas of image processing, information security, information theory, statistics, and so on. It is a new and interesting research topic.</p>
IM6005	3	Image Processing	<p>This course introduces the principal theorem and applied techniques of digital image processing. The content includes the exploration of the spatial domain and frequency domain image compression technique, such as JPEG and JPEG2000, progressive image transmission, digital watermark, etc.</p>
IM6007	3	Computational Biology	<p>1.Sequence Alignment 2.Evolutionary Trees 3.Superstrings 4.Protein Structure 5.System Biology 6.String Matching 7.Superstructures 8.RNA Structures 9.Genome Rearrangement 10.Pattern Discovery 11.Divide-and-Conquer 12.Sorting by Reversal 13.Visu</p>
IM6008	3	Information Security Management	<p>network security protocols, introduction of security standards (for example, ISO7498-2, ITSEC, BS7799), introduction of information security management, information classification and valuation, risks analysis and management, information security policies.</p>
IM6009	3	Advanced Computer Networks	<p>This course will provide an up-to-date survey of developments in computer network and communication issues. In addition to the Internet protocols such as IPv6, Mobile IP, and SCTP, wireless communication and mobile communication will be discussed such as mobile ad hoc networks, bluetooth, and wireless sensor networks.</p>
IM6010	3	Multimedia Database	<p>This class will introduce the types, techniques, and access methods of multi-media databases. In addition to the traditional text and numeric data, the contents of this class include indexing, retrieving, and storing the data of image, document, video, and audio.</p>
IM6011	3	Multimedia Compression Technique	<p>this course discuss on the audio, image, video and all the techniques about data compression. It may include the</p>

			lossless and lossy compression, the spatial domain and frequency domain compression, and also, the encoding techniques of JPEG and MPEG.
IM6013	3	Enterprise Resources Planning	This course examines the concepts of enterprise resources planning (ERP), business process management, implementation issues and organizational benefits of ERP systems. Features of ERP (sub-) systems in general, and those of a specific ERP product, are to be discussed.
IM6015	3	Software Quality Management	The course will cover methods and tools for achieving software quality assurance at various levels of a software system including at the module, subsystem, and system levels. State of the art tools and techniques including inspections, version control, and configuration management will be covered. Also, the role of standards, policies, and procedures will be discussed. The course will prepare students to develop a software quality assurance program in structured, organized ways. This course should provide practical knowledge of a variety of quality assurance techniques, and an understanding of some of the tradeoffs between techniques.
IM6016	2	Special Topics in Web-Based Information Systems	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM6017	2	Special Topics in Decision Support	This course is offered to graduate students who are interested in Decision Support research. Students are to be instructed by their advisors. During the semester, students will need to fulfill the following tasks: (1)paper finding, (2)information gathering, (3)paper studying, (4) reports writing, (5) research discussing, and, if possible, (5)paper publications. Each student must present journal/conference papers related to his research field during the semester. Through the guidance of advisor(s), students are expected to level-up their research knowledge and skills.
IM6018	2	Special Topics in multimedia security	The course discusses various advances topics of multimedia security via regular meeting of participating professors and graduate students. Through presentation, group discussion, and investigation, this course attempts to increase students' research ability and to motivate innovation. Every student should take turns to report an academic paper related to his/her research fields. They also should write summary reports about each paper presentation.
IM6019	2	Special Topics in Wireless Network	The course aims at the development and applications of advanced wireless network such that mobile ad hoc network, wireless sensor network, RFID, IR, 3G ... etc. Each student must present a journal paper related to his

			research field. Reports and questions are also needed in this class.
IM6020	2	Special Topics in multimedia technique	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM6021	2	Special Topics in Information Encryption and Security	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM6022	2	Special Topics in Cross-platform Business Systems	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM6023	2	Special Topics in knowledge Management	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM6024	2	Special Topics in Network Security	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM6025	2	Special Topics in Mobile Multimedia	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM6026	2	Special Topics in Multimedia Databases	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM6027	2	Special Topics in Data Compression and Applications	The course aims at the development and applications of advanced multimedia application. Each student must present a journal paper related to his research field. Reports and questions are also needed in this class.
IM6029	3	Parallel Computing	Applications with large computational requirements and data-intensive applications are rapidly evolving in many scientific domains. For this reason, parallel computing is gaining attention and is an area of interesting study. Different types of parallel systems are available to users. We deal not only with common parallel-processing problems but also with issues that have emerged in high-performance computing.
IM6030	3	Digital Rights Management	Digital Rights Management (DRM) refers to protecting ownership/copyright of electronic content by restricting what actions an authorized recipient may take in regard to that content. This course covers the fundamentals of DRM systems including identifying, tracking, authorizing and restricting access to digital media. Coverage includes fundamentals of DRM systems,

			intelligent property rights, digital content distribution, managing the use of digital assets, and related protocols and standards. A number of advanced topics will be covered, including mobile DRM and hacking methods.
IM6031	3	Process Improvement Methodologies	This course aims to introduce Six Sigma history, theory, analysis techniques and related software. “Green Belt training program” will be the core of this class. By analysis of theory and illustration of real cases, this course helps student develop the skills of Six Sigma to improve critical processes dramatically.