A6-3-1 課程網頁國際化之建置－授課目標

系所：資訊與通訊系

學程：碩士

Course Descriptions of Undergraduate Program
Department of Information Management

Code	Credits	Course Name	Course Description
FC5001	1	Research Methodology	The course leads to a research project. It includes how to organize a project and a report. Also, the statistics and data analysis are attenuated in the course.
FC5002	2	Technical Writing	1. Vocabulary 2.Sentence structure 3. Paragraph structure 4. English Composition
	0	Speeches in Information Technology	Through reading, discussing, summarization, and presentation of professional conference and journal papers, this course aimed at expanding student's capability in both width and depth of their research, exploration of research issues, and oral presentation skills.
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FC5003	1	Seminar Ⅰ	Through reading, discussing, summarization, and presentation of professional conference and journal papers, this course aimed at expanding student's capability in both width and depth of their research, exploration of research issues, and oral presentation skills.
FC5004	1	Seminar Ⅱ	Through reading, discussing, summarization, and presentation of professional conference and journal papers, this course aimed at expanding student's capability in both width and depth of their research, exploration of research issues, and oral presentation skills.
FC5005	1	Seminar Ⅲ	Through reading, discussing, summarization, and presentation of professional conference and journal papers, this course aimed at expanding student's capability in both width and depth of their research, exploration of research issues, and oral presentation skills.
FC5401	3	Cryptography	This course is aimed to introduce students to a broad exposure to advanced operating systems topics. Topics to be discussed in the

			course include protection, security, memory management, operating system kernels, file systems, synchronization, naming, and distributed systems.
FC5402	3	Mobile Communication	This course is designed to teach students various technologies for wireless networks. The topics discussed in the course include 1.Wireless LAN and its research in 802.11, WLAN security. 2. GPRS wireless network. 3. Wireless Application Protocol (WAP). 4. Bluetooth Issues and Applications.
FC5403	3	Operating System	While computer networks provide an infrastructural backbone, distributed systems explore this backbone while providing transparency of the underlying network infrastructure to distributed applications. In addition to the fundamentals of distributed systems, this course discusses topics such as interprocess communications, synchronization and global states, Byzantine problems, distributed operating systems, distributed object models, and web services.
FC5404	3	Digital Communications	Tentative topics covered in this course include digital image fundamentals, mathematical preliminaries of two-dimensional systems, image transforms, human perception, color basics, sampling and quantization, compression techniques, image enhancement, image restoration, image reconstruction from projections, and binary image processing.
FC5405	3	Numerical Analysis	This course responds to the needs of the engineering and physical sciences curricula by providing an applications-oriented introduction to numerical methods/analysis. Rather than a pure discussion and analysis of methods, we shall often integrate a discussion of the properties of engineering and physical problems with the discussion of methods by which such problems may be solved numerically. This approach is more “natural” and more like the one student actually follow when applying numerical methods within their areas of interest. Topics in function approximation, nonlinear equations, interpolation, numerical integration and differentiation, and numerical solution of ordinary differential equations will be similarly treated. The discussion of approximate arithmetic and error propagation will also arise in a natural way.
FC5406	3	Random Process	1. The Axioms of Probability 2. Random Variables 3. Sequences of Random Variables

			4. Statistics 5. Stochastic Processes 6. Estimation
FC5407	3	Microwave Circuit	1. Review of Electromagnetic Wave Theory 2. Transmission Line Theory 3. Microwave Network Analysis 4. Characteristics of Planar Transmission Lines 5. Waveguide Circuit Theory 6. Planar Circuit Components
FC5408	3	Advanced Computer Networks	This course will provide an up-to-date survey of current developments in high speed networks. We will cover the multimedia, congestion control, and QoS issues based on the Internet Protocol, the entire TCP/IP protocol suite, and ATM networks.
FC5409	3	Network Programming	Review of Underlying Network Technologies; OSI 7- Layer; LAN、MAN、WAN; Ethernet Technology, IP Protocol; ARP; RARP; Internet Protocol Operation TCP Protocol Operation, Packet Driver Interface; Network Programming over Packet Driver Interface, Socket Interface; Network Programming over Socket Interface.
FC5410	3	Digital Filter Design	Discrete Fourier Transform and FFT, Finite Impulse Response Filter, Infinite Impulse Response Filter, Digital Filter Structures, Digital Filter Design
FC5411	3	Radio Frequency Circuit Analysis and Design	The studies on RF fundamentals, Smith chart and its applications, Impedance matching techniques, Network parameters, Passive networks design, and Filters design.
FC5412	3	Wireless Communication Networks	This course covers the standards of IEEE 802.11. Tentative topics include Physical and MAC layer, Power Saving, Security, QOS, WiMAX, and Telecommunication and so on.
FC5413	3	Mobile Communication	This course attempts to provide a unified overview of the broad field of wireless technology and computer communication. We will introduce this course that includes basic communication properties, computer networks, wireless technologies, and applications.
FC5414	3	Digital Signal Processing	1. Signals and signal processing. 2. discrete-time signals and systems in the time-domain. 3. discrete-time signals in the transform-domain 4.applications of digital signals processing 5. 2-D digital signal processing 6.high pass and low pass filters. 7. Wavelet transforms

			8.pattern recognition schemes.
FC5415	3	Technique on Wireless Networking	The course introduces the telecommunication systems. It covers the field of concepts to Telecommunication, Wireless Communication Technology, Wireless Networking, Circuit Switched Network Systems, Satellite Communications, and Wireless Local Area Networks (WLANs).
FC5416	3	High Speed Networking	Protocols and the TCP/IP Suite, High-Speed LANs, Overview of Probability and Stochastic Process, Queuing Analysis, Congestion Control in Data Networks and Internets, Link-Level Flow and Error Control, Exterior Routing Protocols and Multicast, Quality of Service in IP networks
FC5417	3	Networking Security	Cryptography concept, security protocol, attack, firewall practice
FC5418	3	Network Performance Analysis and Simulation	Asynchronous Transfer Mode Networks；Performance Analysis ；Delay Models in Data Networks；Multiple access Communication Protocols；Routing in Data Networks；Flow control
FC5419	3	Neural Networks and Its Applications	Fundamental Concepts and Models of mental processes ,Single-Layer Perception ,Multilayer Perceptron ,Hopfield model ,Recurrent Network ,Associative Memories ,Self-Organizing Networks ,Reinforcement learning
FC5420	3	Detection and Estimation	Mathematical tools, Signal detection and classification, Parameter estimation, State estimation, Supervised learning, Feature extraction and selection, Unsupervised learning and self-organization
FC5421	3	Network Voice Phone Systems	This course will discuss the Voice over Internet Protocol (VoIP) issue and related topics. Some hands on experiment, such as implementing RTP, SIP as well as MGCP simulation program, will be conducted to help students to understand the VoIP principle and applications.
FC5422	3	Advanced Network Programming	Web Services, AXIS, Apache ,e-Learning, SCORM
FC5423	3	Queuing Theory	1. Introduction 2. Probability Theory 3. Stochastic Processes 4. Markovian Queues 5. Advanced Queues 6. Simulation 7.Queuing Networks 8.Multi-class Queuing Networks 9. Approximate Methods 10. Blocking in Queues

			11. Queue Design.
FC5424	3	Source Coding	This course provides the knowledge of error control coding scheme. The contents of this course are Finite fields, linear block codes, Cyclic codes, Convolution codes, Trellis coded modulation, Burst error correcting codes and Turbo codes
FC5425	3	Multimedia Data System	Enabling technologies, Computer graphics, Vector graphics, Bitmapped images, Characters and font, Video, Animation, Combining media, Events, scripts and interactivity, Media and networks
FC5426	3	Wireless communication systems	This course provides a general overview of wireless communication systems and addresses fundamental concepts in this field. After a review of spread spectrum systems and their application to multiuser communications, advanced wireless communication systems and general concepts of wide and local area wireless networks are described.
FC5427	3	Broadband Network	This course is aimed at introducing the concepts of wireless networks. The following topics will be covered in this class. 1. PCS, GSM, GPRS 2. Wireless LAN, Mobile IP, Bluetooth 3. 3G Mobile Systems 4. Beyond 3G Mobile Systems 5. Mobile Ad Hoc Networks 6. Wireless Sensor networks
FC5428	3	Adaptive Signal Processing	Concepts on Adaptive Systems，The Wiener Filter，The Linear Adaptive Filters，Properties of Quadratic Performance Surface，Minimization of Mean Square Error，The LMS Method，Applications on System Modeling，Applications on Inverse Control，Applications on Noise Cancellations
FC5429	3	Protocol Engineering	This course covers the fundamentals of protocol engineering. Tentative topics include communication protocols: architecture, requirements, and validation; protocol design; finite state machine design and closure check; and protocol suite design, validate, and specifications.
FC5430	3	Multimedia Communications	1. An Introduction to 3G Networks 2. An Introduction to IP Networks 3. Multimedia Service Support and Session Management 4. IP-Mobility 5. Quality of Service

			6. IP for 3G
FC5431	3	Distributed Systems	In this course, students will learn what the distributed system is. The different topics and applications on a distributed system will be discussed. Also the students will practice and design programs to simulate a simplified distributed system.
FC5432	3	Embedded systems	1. Introduction to embedded systems and SoC platform 2. Embedded processor and memory organization 3. Devices and buses device networks 4. Device driver and interrupts servicing mechanism 5. Programming modeling concepts n single and multiprocessor systems 6. Software engineering practices in the embedded software
FC5433	3	Algorithms	This course investigates several important algorithm topics. The covered issues in this course includes — Complexity of algorithms and lower bounds of problems — NP-complete — Greedy method — Divide-and-conquer — Tree searching strategies — Prune-and-search strategy — Dynamic programming
FC5434	3	Real Time System Design	1. Introduction to Real-Time Systems and RTOS. 2. Real-Time Operating Systems. 3. Real-Time Programming. 4. Multi-Thread Programming. 5. Signals and data acquisition
FC5435	3	Integral Circuit Design	Cell-based Chip Design Concepts, Virology Hardware Description Language, Logic Synthesis, Hspice, Layout Implementation, Nyquist-Rate A/D Converter Design, RF CMOS IC Design Flow
FC5436	3	Wireless Sensor Networks	Microcontrollers, Energy sources, protocols, antenna, and Introduction to IEEE 802.15.4 LR/WPAN.
FC5437	3	Spread Spectrum Communication	The modern communication in multiple access technology is presented in this course. The contents are (1)Introduction,(2)Basic multiple access spectrum,
			1. Introduction to PCS

FC5438	3	Personal Communication System	2. Mobility management 3. Handoff management 4. GSM Core network signaling framework 5. GSM Mobility Management 6. International Roaming for GSM 7. GSM Network Signaling Framework 8. SMS specification 9. GPRS 10. UMTS 11. Other PCS systems
FC5439	3	Error Control Coding	1.Introduction to Algebraic codes 2.Mathematical foundations 3.Introduction to BCH codes and Finite Fields 4.Finite Fields 5.Cyclic codes 6.BCH, RS codes and their decoding 7.Convolutional codes and Viterbi decoding 8.Reed Muller codes and Reed decoding
FC5440	3	Advanced Digital Communications	Advanced communication concepts and techniques, Boundary of communications, Continuous phase modulation,Convolutional code and Viterbi decoding, Trellis coded modulation,OFDM system
FC5441	2	Wireless network technologies: principles, protocols and applications	This course covers the standards of IEEE 802 series. Tentative topics include WPAN, WLAN, WMAN, WWAN, MIH (Media Independent Handover) and so on. The experiments of this course include the packet analysis of WiFi , Bluetooth, Zigbee, and RFID
FC5801	1	Special Topic on Wireless Network	Mobile IP and Wireless Network Application Technology, Wireless LANs, Medium Access Control, OFDM and WLAN 802.11a,Papers discussion
FC5802	1	Special Topics on Communications	Through reading, discussing, summarization, and presentation of professional conference and journal papers, this course aimed at expanding student's capability in both width and depth of their research, exploration of research issues, and oral presentation skills.
FC5803	1	Special Topics on Data Security	Developing and Writing the Information Security Policy, Paper and correlation research discussion
FC5804	1	Special Topic on Signal Processing	Single-input Single-output (SISO) Blind Equalization and Channel Estimation , Multiple-input Multiple-output (MIMO) Blind Equalization and Channel Estimation, Applications of MIMO Blind Equalization Algorithms

FC5805	1	Special Topic on Multimedia Applications	The technology on networking is introduced in this course. It includes VoIP skill, 3G wireless networking and real time multimedia transmission.
FC5806	1	Special Topics on Spread Spectrum Communications	CDMA, BPSK Direct Sequence Spread Spectrum, UWB TH-PPM systems, QPSK Direct Sequence Spread Spectrum, UWB DS-CDMA systems,
FC5807	1	Special Topics on Network Security	Network security and assurance, Introduction to network security appliance, Network processor and network processor realm
FC5808	1	Special Topic on Digital Signal Processing	DSP introduction, Digital Audio Recognition, 2D image compression, Paper and correlation research discussion
FC5809	1	Special Topics on Broadband Network	An Introduction to Network Switching Technology, Frame Relay Networks and Its Congestion Control, Packet Classification (1),Packet Classification (2),Paper and correlation research discussion
FC5810	1	Special Topics on Digital Communications	1. Introduction to Digital Communication Systems 2. GSM 3. IEEE802.11
FC5811	1	Special Topics on e-business Security	Diffie-Hellman Key Exchange, Message Authentication and Hash Function, Cryptographic Hashing Algorithms, Certification Authority (CA), Public Key Infrastructure (PKI)
FC5812	1	Special Topic on Digital Signal Filters	DFT and FFT, IIR filter, FIR filter, Application of Audio and Image Processing, Paper and correlation research discussion
FC5813	1	Special Topics on Next Generation Network	IEEE 802.11 Overview, A QoS Architecture for the MAC Protocol of IEEE 802.16 BWA System, Power Saving in WiMAX Networks, Application scenarios, Papers discussion
FC5814	1	Special Topics on Mobile Communications	1. Introduction to Mobile Communication Systems 2. IEEE802.16 3. Special topics on Communications
FC5815	1	Special Topics on Multimedia Security	1. Intoruction to market and technology of multimedia and network, 2.CRPTOGRAPHY AND NETWORK SECURITY 3.WIRELESS MULTIMEDIA SYSTEM RESEARCH 4. PAPER DISCUSSION
FC5816	1	Special Topic on Adaptive Signal Processing	The Wiener Filter，Properties of Quadratic Performance Surface，Minimization of Mean Square Error，Applications on System Modeling，Applications on Noise Cancellations， Paper discussion