

## College of Electrical Engineering & Computer Science (電資學院)

### Fall Semester

Course Code	Course Name	Credits	Hours
3107002	Technical Writing	3.0	3
<b>Description</b>	This course helps the learners recognize the syntax, style, and organization as far as the papers on technology and technical writings are concerned. Discussions include specific ways to technical presentation and technical writings.		
Course Code	Course Name	Credits	Hours
5901209	Computer Programming( I )	3.0	3
<b>Description</b>	To familiarize the student with basic computer programming concepts. Topics cover the methods for analyzing problem statements, designing computer solutions, as well as an introduction into the syntax and semantics of the C and C++ programming language. An important objective of the course is to present effective methods of program design using modular construction and structured programming notions of sequence, selection, and iteration structures.		
Course Code	Course Name	Credits	Hours
5905005	Communication Software Design	3.0	3
<b>Description</b>	Modern communication and signal processing systems rely on the close collaboration of circuits, hardware, and software. Therefore, software design is one of the core capabilities that communication system engineers should possess. This course aims to establish this core capability using C/C++ as the working language. The student is expected to complete a term project that involves 150 to 200 hours of work off class. The following topics are covered: 1 Characteristics of Communication Software 2 Procedure-oriented programming 3 Object-based programming 4 Object-oriented programming 5 Generic programming using C++ Standard Template Library (STL) 6 Unit testing 7 Communication libraries 8 Case studies in communication software design 9 Term project in communication software design		
Course	Course Name	Credits	Hours

<b>Code</b>			
9905002	Graduate Seminars	2.0	4
<b>Description</b>	Case Study, Seminars, Group meeting		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3105003	Modern Control Theory	3.0	3
<b>Description</b>	Introduction of Modern Control Theory . Linear space Analysis , State equation and Response, Controllability and Observability , Stability Analysis, State Feedback and Estimation, Controller Design and Applications, Observer Design and Applications, Nonlinear systems, Time varying Systems, Applications of Modern Control theory.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3603063	Electromagnetics	3.0	3
<b>Description</b>	To make the students understand the basic concepts and applications of Electromagnetics which includes : 1.Electromagnetic Model. 2.The Vector Analysis. 3.Static Electric Fields. 4.Electrostatic Problems`Solutions. 5.Steady Electric Currents. 6. Steat Magnetic Fields. 7.Time Varying Fields and Maxwells`Equations. 8.Plane Electromagnetic Waves. 9.Theory and Applications of Transmission Lines. 10.Waveguide and Cavity Resonators. 11.Antenna and Radiation Theory.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4115015	Radio Frequency IC Design	3.0	3
<b>Description</b>	This course is introduced the principle of Radio Frequency IC Design such that the students have the ability of Radio Frequency IC design. The contents of this course are 1、CHARACTERISTICS OF PASSIVE IC COMPONENTS 2、A REVIEW OF MOS DEVICE PHYSICS 3、PASSIVE RLC NETWORKS 4、DISTRIBUTED SYSTEMS 5、THE SMITH CHART AND S-PARAMETERS 6、BANDWIDTH ESTIMATION TECHNIQUES 7、HIGH-FREQUENCY AMPLIFIER DESIGN 8、VOLTAGE REFERENCES AND BIASING 9、NOISE ANALYSIS 10、LNA DESIGN 11、MIXERS 12、RF POWER AMPLIFIERS 13、FEEDBACK SYSTEMS 14、PHASE-LOCKED		

	LOOPS 15 、 OSCILLATORS AND SYNTHESIZERS 16 、 ARCHITECTURES		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4125021	Array Signal Porcessing	3.0	3
<b>Description</b>	The primary object of this course is to present the fundamental concept and treatment for spatial signal processing dealing with interference encountered in wirelwss communication by using an adaptive array. It is also the additional purpose of the subjects to provide the anallytic techniques used to predict the performance in other new applications.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4125025	Wireless Multimedia Commumications	3.0	3
<b>Description</b>	1.Introductions 2.Entropy coding 3.Rate-distortion theory and quantization 4.Motion compensation and Interframe coding 5.MPEG video coding 6.Multimedia transmission 7.Wireless propagation channels 8.Digital modulation in wireless systems 9.Channel coding in wireless systems 10.Schemes to overcome multipath fading 11.Standards of wireless multimedia communication systems		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4135011	Microwave Dielectric Resonator	3.0	3
<b>Description</b>	1.The Characteristics of High-frequency Dielectric Materials 2.The Introduction of Dielectric Resonators 3.Theory of Cylindrical Dielectric Waveguides 4.Simple Resonate Model for Analysis 5.Rigorous Analysis Methods 6.The Characteristis of Coupling 7.The DR's Practical applications at High Frequencies		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5905121	Coding Theory	3.0	3
<b>Description</b>	0. Introduction Part I. Source Coding 1. Source Coding Theorem and Entropy 2. Lossless Compression: runlength, Huffman, arithmetic, Lempel-Ziv, * 3. Rate-Distortion Theorem 4. Lossy Compression: quantization, predictive techniques, transform and subband coding, MPEG Part II. Channel Coding 5. Channel Coding Theorem and		

	Capacity 6. Introduction to Finite Fields 7. Block Codes: CRC, Hamming, Golay, BCH, Reed-Solomon, * 8. Convolutional Codes 9. Coded Modulation		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5905124	Digital Signal Processing	3.0	3
<b>Description</b>	1.Fourier analysis and signal sampling 2.Frequecy response of discrete time system 3.IIR digital filter design 4.FIR digital filter design 5.Discrete Fourier transform 6.Fast Fourier transform		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5905127	Random Signals and Systems	3.0	3
<b>Description</b>	This course contains the basic theories in probability and random processes. It includes probability measures, random variables, the law of large numberrandom processes and stationary processes. The course is a basic course in field of communications and controls in graduate school.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5925105	Computer Communication Networks	3.0	3
<b>Description</b>	1.Introduction to Computer Communication Networks 2.Layered Structure 3.Routing and Switching Techniques 4.Flow and Congestion Control 5.Medium Access Control Mechanism 6. Local Area Networks 7. Network Interconnection 8. Wireless Networks 9. High Speed Networks		

### Spring Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3105096	Graduate seminar - power electronics engineering	4.0	8
<b>Description</b>	Case Study. Seminar. Group meeting.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
9905002	Graduate Seminars	2.0	4
<b>Description</b>	Case Study, Seminars, Group meeting		

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A000001	Seminar	4.0	8
<b>Description</b>	Invited speakers from different disciplines give speech in their specialized area. Thus students can broaden their eyesight and also keep updating the technology and its applications of the generation.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3105048	English for Science and Technology	3.0	3
<b>Description</b>	This course helps the learners recognize the syntax, style, and organization as far as the papers on technology and technical writings are concerned. Discussions include specific ways to technical presentation and technical writings.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3603068	Electromagnetic Waves	3.0	3
<b>Description</b>	1.Introduction to Time-Varying Fields; 2.Plane Electromagnetic Waves; 3.Theory and Applications of Transmission Lines; 4.Waveguides and Resonators; 5.Antennas and Radiating Systems.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4125008	Mobile Communications	3.0	3
<b>Description</b>	1.Introduction to wireless communication systems 2.An Overview of cellular systems 3.Mobile Radis Propagation(path loss,multipath fasing,propagation models) 4.Modulation techniques for mobile communications 5.Multiple access techniques for mobile communications 6.Antenna,dirersity and link analysis 7.Channel coding and speech coding 8.Wireless networking 9.Wireless systems standards and further developments		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4125022	Microwave Communication	3.0	3
<b>Description</b>	Due to advantages in accommodating larger capacity of individual information channels, less path loss for long didtance link		

	<p>communication has rapidly expanded throughout the world in recent year. Such as WLAN, WCDMA and Mobile communications etc. Therefore, the object of this course is to provide the crucial background knowledge for microwave link concept, architecture and processing. Major parts of this course will be emphasized on the region of system level rather than go into detailed component questions. Thus, it is perhaps more suitable for senior or graduate students.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4125023	Wireless Local Area Networks	3.0	3
<b>Description</b>	<p>This course contains the medium access control layer(MAC) and physical layer(PHY) of the most recent IEEE 802.11 standards for wireless local area networks. The techniques employed by the standards, e.g., carrier sense multiple access/collision avoidance (CSMA/CA), orthogonal frequency-division multiplexing (OFDM), will be discussed in details.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4135016	Microwave Active Circuits	3.0	3
<b>Description</b>	<p>1. Transmission line 2. Scattering parameters 3. Microwave active components 4. Wideband amplifier 5. Low noise Amplifier 6. Power amplifier 7. Highly-stable oscillator 8. Voltage-controlled oscillators 9. Phase-locked loop 10. Mixers</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5105007	Polymer Processing	3.0	3
<b>Description</b>	<p>The course focuses on the "trouble shooting" in the polymer processing. Both theoretical and practical topics will be included. The main contents are divided into the following units: (I) Fundamental Studies: (a) Transport Phenomena (b) Viscoelastic Properties of Polymer Melt (c) Polymer Compounding and Blending. (II) Practical Studies: (a) Compression Molding (b) Injection Molding (c) Reaction Injection Molding (d) Fiber Formation (e) Membrane Formation.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>

5905122	Queueing Theory	3.0	3
<b>Description</b>	1.Probability theory review 2.Random variates generations 3.Introduction to stochastic processes 4.Simple Markovian queueing systems 5.Semi-Markovian queueing systems 6.Open and closed queueing networks 7.Performance evaluation of random access networks 8.Traffic modelling 9.Switching networks		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5905132	Special Topics in Digital Signal Processing	3.0	3
<b>Description</b>	Thorough treatment of special topics in digital signal processing technologies such as multi-rate signal processing,spectral estimation, intro to fixed-point DSP CPU,normalization and overflow protection, implementation issues, and case studies.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A000011	Photoelectrochemistry and solar cell	3.0	3
<b>Description</b>	The concept of photoelectrochemistry is to utilize the solar energy and other light sources to drive a complete electrochemical oxidation-reduction reaction where the photocatalytic electron reaction has been converted into electrical energy. Photovoltaic cells which also known as solar cells composed of organic and inorganic materials and electrolytes are the great example for the photoelectrochemical reactions. Here the proposed course is constructed to introduce and implement the basic photoelectrochemical principles, measurements, photoelectrocatalysis, photoelectrical charge transfer and the storage of chemical energy. Further the remaining section of this course will be focused on the detailed studies about the development of different inorganic, organic materials for the fabrication of dye-sensitized solar cells.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A000015	Surface Science and Technology	3.0	3
<b>Description</b>	This course is designated to acquaint the student with atomic-level understanding of surface structure and surface phenomena. The course focuses on the surproperties of the solid-gas and solid-vacuum interfaces		

	<p>because most of the results of modern surface-science studies on the atomic level come from the scrutiny of these interfaces. It contains the following topics: the atomic-level structure of clean and adsorbate-covered surfaces, adsorption and desorption, surface diffusion, surface segregation, the nature of the surface bonding, the adsorbate-adsorbate interaction, energy transfer during gas-surface interactions and surface reaction; surface analysis techniques.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A000022	Advanced Biooptoelectronics	3.0	3
<b>Description</b>	<p>This course covers optoelectronics combine with biomolecular of knowledge. We will focus on discussing how the DNA, RNA, protein or cells related with optoelectronic application. Optoelectronics is the study and application of electronic devices that source, detect and control light, usually considered a subfield of photonics. The light often includes invisible forms of radiation such as gamma rays, X-rays, ultraviolet and infrared, in addition to visible light, which is based on the quantum mechanical effects of light on semiconducting materials. A biomolecule is any organic molecule that is produced by a living organism, including large polymeric molecules such as proteins, polysaccharides, and nucleic acids as well as small molecules such as primary metabolites, secondary metabolites, and natural products. As organic molecules, biomolecules consist primarily of carbon and hydrogen, nitrogen, and oxygen, and, to a smaller extent, phosphorus and sulfur.</p>		

## College of Mechanical & Electrical Engineering (機電學院)

### Fall Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
6607004	Mechanical & Electric Technology Seminar	4.0	8
<b>Description</b>	<p>Case Study, Workshop, Group discussion, Seminars, Mechatronics in Modern Industries.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>



A000001	Seminar	4.0	8
<b>Description</b>	Invited speakers from different disciplines give speech in their specialized area. Thus students can broaden their eyesight and also keep updating the technology and its applications of the generation.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4005013	Vibration and Noise Control	3.0	3
<b>Description</b>	Topics include: Mechanical vibration, Vibration transmission, Vibration measurement, The use of vibration isolators and absorbers, Fundamentals of acoustics, Noise control engineering, Instrumentation and Law.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4406101	Control Theory	3.0	3
<b>Description</b>	Linear space Analysis, State equation and Response, Controllability and Observability, Stability Analysis, State Feedback and Estimation, Controller Design and Applications, Observer Design and Applications, Nonlinear systems, Time varying Systems, Applications of Control theory		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4406129	Personal Intelligent Rapid Transportation Vehicle and Operation System	3.0	3
<b>Description</b>	This course introduces the "Personal Intelligent Rapid Transportation Vehicle" and the "Operation System". And it will drive to focus on the future vehicle technology development to face the challenges on the environmental impacts from the growth of the crowded mega cities, on the energy saving due to the shortage of the foil fuel, on the differentiation and ICT innovation from the young people, and on the metropolitan last-mile transportation solution to link with the public transportation system. This course contains numerous fundamental domain knowledge and technologies including vehicle system, powertrain module, energy module, lightweight chassis, environmental policy, infrastructure planning and innovative business model investigation, etc. Students will learn the fundamental knowledge of the		

	future "Personal Intelligent Rapid Transportation Vehicle and Operation System" development.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4406129	Personal Intelligent Rapid Transportation Vehicle and Operation System	3.0	3
<b>Description</b>	This course introduces the "Personal Intelligent Rapid Transportation Vehicle" and the "Operation System". And it will drive to focus on the future vehicle technology development to face the challenges on the environmental impacts from the growth of the crowded mega cities, on the energy saving due to the shortage of the foil fuel, on the differentiation and ICT innovation from the young people, and on the metropolitan last-mile transportation solution to link with the public transportation system. This course contains numerous fundamental domain knowledge and technologies including vehicle system, powertrain module, energy module, lightweight chassis, environmental policy, infrastructure planning and innovative business model investigation, etc. Students will learn the fundamental knowledge of the future "Personal Intelligent Rapid Transportation Vehicle and Operation System" development.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5605033	Kinematic Synthesis of Mechanisms	3.0	3
<b>Description</b>	Type Synthesis and Number Synthesis of Mechanisms. Creative Mechanism Synthesis. Dimensional Synthesis of Motion, Path, and Function Generators. Optimal Design. Introduction of Spherical Mechanisms and Spatial Mechanisms.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
6105038	Applied Technology of Digital Signal Processor	3.0	3
<b>Description</b>	Introduction of Digital Signal Processing, Architecture of DSP (based on TMS320 family of Texas Instruments ), Laboratory of servo motor and motion control using DSP		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>

6105055	Digital Image Processing	3.0	3
<b>Description</b>	<p>The goal of this course is to let students to understand the concepts and techniques used in the field of digital image processing. In addition, students will be using the high level language (C++, Java, Matlab etc.) to complete the programming of the corresponding techniques. The outline of this course is given below. (1) Introduction, (2) Digital Image Fundamentals, (3) Image Enhancement in the Spatial Domain, (4) Image Enhancement in the Frequency Domain, (5) Image Restoration, (6) Color Image Processing, (7) Morphological Image Processing, (8) Image Segmentation, (9) Wavelets and Multiresolution Processing, (10) Image Compression.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
6105057	Machine Vision and Image Processing Algorithm	3.0	3
<b>Description</b>	<p>This subject provides an introduction to the process of generating a symbolic description of an environment from an image and the fundamentals of machine vision and image processing techniques. Lectures include the following topics: ※ The physics of image formation, ※ Vision System Design, ※ Motion vision, ※ Recovering shapes from shading, ※ Shape from Shading, ※ Binary image processing, ※ Photogrammetry, ※ Stereo Vision, ※ Object representation alignment, ※ Camera Calibration, ※ Computational vision, ※ Optical Illumination, ※ Applications to robotics and intelligent machine interaction Textbook: Horn, Berthold K. P., Robot Vision. Cambridge, MA: MIT Press/McGraw-Hill, March 1986. ISBN: 0262081598.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
6105071	Application and design of engineering software	3.0	3
<b>Description</b>	<p>How to solve the numerical analysis problem via engineering software will be introduced in this course. Students will be familiar with the programming engineering software in this course. Besides, students will learn how to utilize the software to solve the different engineering problems.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>

A000005	Polysaccharide for Biomass Energy	3.0	3
<b>Description</b>	Bioenergy is referred to the energy stored in living or recently living biological organisms, such as animals, plants and microbes. The source of bioenergy can be traced back from plants harvesting the sunlight and converting it to glucose, then to other biopolymers such as polysaccharides. The technologies for developing bioenergy, with an emphasis on environmentally compatible, consist of gene cloning technology from molecular biology and enzymatic control and catalytic chemistry (i.e. green chemistry). The course is an introduction course on the types of polysaccharides in animals and plants, how scientist use system biology to develop bioenergy.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A000006	Biofuel cells	3.0	3
<b>Description</b>	The aim and purpose of this course is to introduce and expand the electrochemistry to develop the biofuel cells. Generally the catalysts of biofuel cell are composed by enzymes, microbial, creature cells and the bio-reduction process. In the biofuel cells the reaction process can be distinguished into mediator less and mediator transfer process. In this course, we will introduce the principle, reaction process and the application of biofuel cells. Especially, a detailed study about the utilization of film modified electrodes and different electrolyte solutions for the development of biofuel cells.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A000010	Electrical Magnetic and Optical Properties of Materials	3.0	3
<b>Description</b>	This course is a special topics of Optical , Electrical and Magnetic Properties of Materials, including: 1.Lattice and crystal structure; 2. Lattice vibration; 3.Band structure; 4. Hall effect-At room and low temperatures; 5. Optoelectronic effects of materials; 6. Effects of optical, electric, and magnetic fields on materials		

### Spring Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
6607004	Mechanical & Electric Technology Seminar	4.0	8

<b>Description</b>	Case Study, Workshop, Group discussion, Seminars, Mechatronics in Modern Industries.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A000001	Seminar	4.0	8
<b>Description</b>	Invited speakers from different disciplines give speech in their specialized area. Thus students can broaden their eyesight and also keep updating the technology and its applications of the generation.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4005012	Mechatronics in Precision Machinery	3.0	3
<b>Description</b>	Accuracy, Repeatability, Precision and Resolution; Elastic Deformation, Backlash, Friction and their Dynamic Properties; System Compensation; precision Mechanisms and Dynamic Analysis.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4006004	Application of Intelligent Controller	3.0	3
<b>Description</b>	1.Introduction to neural network: algorithms, applications, programming techniques. 2. Design and simulation of neural network controller 3. Introduction to fuzzy set, approximate reasoning, fuzzy logic controller 4. Design and simulation of fuzzy logic controller 5. Introduction to genetic algorithm 6. Optimization of controller by genetic algorithm 7. Applications of intelligent controller		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4007001	Physics on Nano silicon device	3.0	3
<b>Description</b>	The study on the physics limits and physics modeling of Nano silicon device.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4406122	Intelligent Vehicle Dynamics and Control	3.0	3
<b>Description</b>	To provide an overview of Vehicle Dynamics and Control Systems of intelligent vehicles in ITS. Students will learn introduction to vehicle dynamics, driver modeling, driving simulation, engine/power-train		

	control, cruise control, traction control/ABS, four-wheel steering, steer-by-wire, active/semi-active suspension, intelligent traffic systems, active safety technologies, and advanced power-train technologies. Upon completion of this course, students should be able to follow the literature on these subjects and perform independent design, research and development work in this field.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4406124	Intelligent Control	3.0	3
<b>Description</b>	Fuzzy control and grey system are introduced in this course. Then students can apply these theories to control systems and vehicle control. Contents are fuzzy sets, inference, design of fuzzy controller, application, gray system, gray prediction, gray modeling, and gray control.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4406146	Hybrid Vehicle Powertrains	3.0	3
<b>Description</b>	This course presents fundamentals of Hybrid Electric Vehicles: HEV concepts and design, energy analysis, unified modeling approach, optimization and control. The power consumption side of vehicles. Conventional power generation: IC engine overview, concepts of hybridization, general model of energy form and energy flows, on-board energy storage (fuels and batteries). Overview of electrochemical converters: motors, transmissions for HEVs, principles of fuel cells, HEV application. Principles of energy optimization in HEVs.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4406203	Engineering Optimization Methods and Applications	3.0	3
<b>Description</b>	Engineering optimization concepts, Linear programming methods, Nonlinear programming Methods, Multi-objective optimization, Introduction to Modern mathematical programming techniques, Optimum design of precision machine components and systems.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>

5105007	Polymer Processing	3.0	3
<b>Description</b>	<p>The course focuses on the "trouble shooting" in the polymer processing . Both theoretical and practical topics will be included. The main contents are divided into the following units : (I)Fundamental Studies:(a)Transport Phenomena (b)Viscoelastic Properties of Polymer Melt (c)Polymer Compounding and Blending. (II)Practical Studies:(a)Compression Molding (b)Injection Molding (c)Reaction Injection Molding (d)Fiber Formation (e)Membrane Formation.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5605073	Mold engineering	3.0	3
<b>Description</b>	<p>Mold Engineering is to familiarize not only beginners in mold design but also more experienced mold designers with an engineering approach to mold design. In addition, mold engineering is also recommended mold knowledge to any individuals, such as sales and service personnel, in the plastic industry who need to understand mold in their activities. This course is divided into four sections: (1) Basics about Mold, Injection Machine, Plastics, and Products. (2) General Mold Design Guideline: mold layout, gate, runner, venting, ejection, mold cooling. (3) Specification of the Mold: mold parts and material, mold machining, strength and fatigue. (4) Mold Performance: mold life, cycle time, wall thickness, product size and shape. (5) Special Injection Molding: Coinjection molding, Insert molding, Gas-assistant injection molding, over molding, micro injection molding, Metal injection molding, Ceramic injection molding.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
6105031	Automatic Optical Metrology and Experiment	3.0	3
<b>Description</b>	<p>This subject is arranged to introduce the principles and techniques required in Automatic Optical Inspection (AOI). The subject includes the following subtopics: introduction to precision metrology and machine vision, the measurement principles and methods used in the 2D AOI, the measurement principles and techniques used in the 3D AOI, image processing and artificial intelligence methods used in automatic inspection, intelligent measurement systems, AOI system integration and conclusion.</p>		

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
6105062	Special Topics on T-S Fuzzy Model	3.0	3
<b>Description</b>	In this course, the theory and principle of T-S fuzzy model are introduced. First, a procedure how to transform a nonlinear system to a T-S fuzzy model is introduced. Secondly, some systematic methods are introduced to design the controllers for the stability of the overall system and the stability condition is formulated by LMIs form. Finally, the design procedure is utilized to demonstrate by a real physical system.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A000011	Photoelectrochemistry and solar cell	3.0	3
<b>Description</b>	The concept of photoelectrochemistry is to utilize the solar energy and other light sources to drive a complete electrochemical oxidation-reduction reaction where the photocatalytic electron reaction has been converted into electrical energy. Photovoltaic cells which also known as solar cells composed of organic and inorganic materials and electrolytes are the great example for the photoelectrochemical reactions. Here the proposed course is constructed to introduce and implement the basic photoelectrochemical principles, measurements, photoelectrocatalysis, photoelectrical charge transfer and the storage of chemical energy. Further the remaining section of this course will be focused on the detailed studies about the development of different inorganic, organic materials for the fabrication of dye-sensitized solar cells.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A000015	Surface Science and Technology	3.0	3
<b>Description</b>	This course is designated to acquaint the student with atomic-level understanding of surface structure and surface phenomena. The course focuses on the surproperties of the solid-gas and solid-vacuum interfaces because most of the results of modern surface-science studies on the atomic level come from the scrutiny of these interfaces. It contains the following topics: the atomic-level structure of clean and adsorbate-covered surfaces, adsorption and desorption, surface diffusion, surface segregation, the nature of the surface bonding, the		



	adsorbate-adsorbate interaction, energy transfer during gas-surface interactions and surface reaction; surface analysis techniques.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A000022	Advanced Biooptoelectronics	3.0	3
<b>Description</b>	<p>This course covers optoelectronics combine with biomolecular of knowledge. We will focus on discussing how the DNA, RNA, protein or cells related with optoelectronic application. Optoelectronics is the study and application of electronic devices that source, detect and control light, usually considered a subfield of photonics. The light often includes invisible forms of radiation such as gamma rays, X-rays, ultraviolet and infrared, in addition to visible light, which is based on the quantum mechanical effects of light on semiconducting materials. A biomolecule is any organic molecule that is produced by a living organism, including large polymeric molecules such as proteins, polysaccharides, and nucleic acids as well as small molecules such as primary metabolites, secondary metabolites, and natural products. As organic molecules, biomolecules consist primarily of carbon and hydrogen, nitrogen, and oxygen, and, to a smaller extent, phosphorus and sulfur.</p>		

### College of Engineering (工程學院)

#### Fall Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1001001	Physical Education	0.0	12
<b>Description</b>	<p>All students are required to attend two hours per week of Physical Education class. This requirement applies to Freshman Sophomore and Junior students while it is an elective for senior students. For Freshman level, Classes focus on basic physical strength training. For Sophomore and Junior students, classes are interest-oriented, thus giving students the opportunity to select specific activities they are interested in. Choices include Basketball, Volleyball, Table Tennis, Badminton, Bowling, Archery, Golf, Tennis, Gymnastics, Slow pitch, Tai Chi Chuan, Ballroom Dancing, Physical Fitness and martial arts, to mention a few.</p>		

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3390043	Chinese & Taiwanese Culture	4.0	8
<b>Description</b>	<p>The course of Chinese is categorized as three individual stages for four years. In the first year, the course focuses on : (a) Basic Sentence Patterns, (b) Basic Conversation, (c) Languages in the Real Life and (d) the phonetic system for the Chinese language. In the second and the third year, the training focuses on paragraph reading and term/character recognition-in addition to the teaching themes set in the first year. Writing courses are also added during this stage. In the fourth year, we add more emphasis on the conversational ability, term/character recognition and reading ability. More culture-related information will be included.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1401035	Calculus	8.0	10
<b>Description</b>	<p>This course aims at developing comprehension of Derivation and Integral 、activating capabilities of Logic Inference and Induction 、enlightening confidence and independence 、strengthening calculating abilities with an emphasis on its application and diagram 、furnishing a sound basis for future specialty. The content includes : 1.Limits and Continuity, 2.Derivative and Application, 3.Indefinite and Definite Integral, 4.Transcendental Functions and their Inverses, 5.Techniques of Integration, 6.Indeterminate Forms and Improper Integral, 7.Application of Integration, 8.Basic Vector Analysis, 9.Partial Derivative, 10.Multiple Integration, 11.Infinite Series, 12.Ordinary Differential Equation.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3323015	Mining engineering and practices	6.0	8
<b>Description</b>	<p>Various mining exploitation methods and mining equipment involved are introduced in this class. It includes exploration, reserve calculation, resource exploitation, and mining operations (underground and surface). The laboratory exercises include mineral economic analysis, reserve evaluation, mining method selection, break-even analysis, surface blasting design, material handling and machines, hoisting design, recovery calculation, mine power and drainage and overall mining cost</p>		

	analysis.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3390003	Physics (I)	3.0	3
<b>Description</b>	The course is designed for the students with engineering background. The theme of this course is to encourage students to participate in the discovery of laws and wonder of nature, and to solidify the foundation for the particular courses of study for different departments. The contents of this course include mechanics, dynamics, thermodynamics, electromagnetic, optics, and foundation of modern physics, etc.. The lecturers will emphasize or abridge certain contents based on the individual needs of departments. For this course, there will be 3 credits for each of two semesters, and 3 lecture hours per week.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3390005	Physics I Lab.	1.0	3
<b>Description</b>	In this course there will be 1 credit for each of two semesters, and 3 laboratorial hours per week. The first semester experiments involve mechanics, dynamics, thermodynamics, and waves, etc.. The second semester experiments contains electromagnetics, optics, and modern physics, etc.. The purposes of this course are 1: to identify the physical laws, 2:to cultivate the ability of data reduction of students, 4: to instruct the students solving the problems of measurements of measurements by self-designments.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3401001	Surveying	4.0	4
<b>Description</b>	Theory and practice with compass,transit,level,and stadia. Computations of area,earthwork volumes,and horizontal and vertical curves;astronomical observations;boundary surveying;and map plotting.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3401002	Surveying Practice	2.0	6
<b>Description</b>	Theory and practice with compass,transit,level,and stadia. Computations of area,earthwork volumes,and horizontal and vertical		

	curves;astronomical observations;boundary surveying;and map plotting.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3404109	Introduction to Computer Programming	2.0	3
<b>Description</b>	This is the first programming language course for freshmen that replaces the introductory programming course formerly offered by the department. The topics covered in this course includes Unix commands, basic introduction to HTML and web pages, basic computer operation, Fortran architecture, branching structures, loops manipulation, input/output concepts, arrays manipulation, characters manipulation, and procedure calls.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3401005	Chemistry	3.0	3
<b>Description</b>	Introduction to the principles of chemistry and properties of matter, which are explained in terms of modern chemical theory with emphasis on conceptual problems. Individual topics include gas, stoichiometry, atomic structure, chemical bonding, and the states of matter, energy relation, acid-base theory and oxidation-reduction reactions, the chemistry of metallic and nonmetallic elements, nuclear chemistry.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3405144	Introduction to Civil Engineering	3.0	3
<b>Description</b>	The course exposes students to the field of civil engineering. It also introduces students to the mechanics, mathematics and fundamental sciences implemented in landmark civil engineering projects, as well as design issues and latest practices in civil engineering.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4215002	Advanced Reinforced Concrete	3.0	3
<b>Description</b>	Studies of actual member behavior;members in flexure,combined flexure,shear,and torsion;bond and anchorage;combined axial load and flexure;slender columns;deep beams;derivation of current code provisions.		
<b>Course</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>

<b>Code</b>			
4216002	Structural Stability	3.0	3
<b>Description</b>	To demonstrate the linear and nonlinear behavior as well as analysis of buckling and postbuckling problems for pressed members. Both overall and local buckling are investigated. It is aimed to establish an integrated idea for students at structural stability.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4226002	Soil Dynamics	3.0	3
<b>Description</b>	This course will teach how to evaluate the soil's dynamic material properties by means of dynamic laboratory testing. Based on the analytical and numerical solution, the behavior of soil-structure dynamic interaction can be predicted.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4226006	Finite Element Method in Geotechnical Engineering	3.0	3
<b>Description</b>	Finite element method has been widely used to simulate the process of foundation construction, cut and bracing and excavation etc, and to predict and analyze the construction safety. This course should include the basic theory and stiffness matrix formulation, in addition, geotechnical engineering problems are used to help students to understand the basic theory and code formulation. These example problems include seepage, consolidation and earth structure stability analyses.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
6016019	Soil Pollution Remediation	3.0	3
<b>Description</b>	There are many remediation methods in this class. The methods include solvent extraction, air stripping, solidification/stabilization, solid flushing, and thermal treatment. This field also includes bioremediation and cost-effective analysis.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
6016027	Physicochemical treatment process	3.0	3

<b>Description</b>	This course will provide graduate student authoritative information on the current knowledge of Physicochemical treatment process rather than operations, thus encompassing quality transformation in natural waters, water supply, and municipal and industrial wastewaters.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
7305058	International Colloquy on Special Topic: Strategy and Practice of Scientific Writing	1.0	1
<b>Description</b>	An international expert is invited to give the lectures. This course will provide important information regarding to the strategies and practical examples of scientific research. The curriculum include: (1) Problem definition of the research (2) Strategy of the experimental methods (3) Relationship between experimental results and conclusions (4) Practical aspects of scientific paper writing and submission		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
7905025	English Technical Writing (I)	2.0	3
<b>Description</b>	The goal of English Thesis Writing is to help students developing the writing skills through the manipulation of scientific and technical data. Students will learn a variety of rhetorical principles that guide the writing process, apply these principles to scientific and technical writing, and write papers in their own academic fields. Lectures on the writing principle, students' presentations on the reading sections and follow-up activities, pair and individual work on writing practice will be the major activities in the class.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
7925124	Advanced Geotechnical Engineering(I)	3.0	3
<b>Description</b>	Students who having the basic course trainings of soil mechanics, rock mechanics, and engineering geology are welcome. Major topics of Advanced Geotechnical Engineering [I] consist of (1) Case studies of foundation problems, (2) Landslide Types, (3) Investigation of landslide features, (4) Stability analysis of slope, (5) Mitigation of unstable slope, (6) Engineering case studies.		

**Spring Semester**

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3390044	Chinese & Taiwanese Culture	12.0	12
<b>Description</b>	The course of Chinese is categorized as three individual stages for four years. In the first year, the course focuses on : (a) Basic Sentence Patterns, (b) Basic Conversation, (c) Languages in the Real Life and (d) the phonetic system for the Chinese language. In the second and the third year, the training focuses on paragraph reading and term/character recognition-in addition to the teaching themes set in the first year. Writing courses are also added during this stage. In the fourth year, we add more emphasis on the conversational ability, term/character recognition and reading ability. More culture-related information will be included.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1004002	Physical Education	1.0	2
<b>Description</b>	In second semester, Senior students also can choose to attend two hours per week of Physical Education class. When they are finishing the course that can get the credit, also can account in graduate credit. For Senior level, Classes are giving students the opportunity to select specific activities they are interested in. Choices include Basketball, Volleyball, Table Tennis, Badminton, Bowling, Archery, Golf, Tennis, Gymnastics, Slow pitch, Tai Chi Chuan, Ballroom Dancing, Physical Fitness and martial arts, to mention a few.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3323015	Mining engineering and practices	6.0	8
<b>Description</b>	Various mining exploitation methods and mining equipment involved are introduced in this class. It includes exploration, reserve calculation, resource exploitation, and mining operations (underground and surface). The laboratory exercises include mineral economic analysis, reserve evaluation, mining method selection, break-even analysis, surface blasting design, material handling and machines, hoisting design, recovery calculation, mine power and drainage and overall mining cost analysis.		

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3404007	Construction Cost Estimation	2.0	2
<b>Description</b>	The course contents are including: (1)Basic concepts of the Construction Cost Estimation; (2)The Contents of the Construction Cost Estimation (3)The Cost Estimation of varies construction: 1. Temporary Work 2. Fundamental Work 3. Earthwork 4. Concrete Work 5.Reinforcement Work 6.Prestressed Concrete Work 7. Steel Structure Work 8. Construction Work 9.MEP		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5105007	Polymer Processing	3.0	3
<b>Description</b>	The course focuses on the "trouble shooting" in the polymer processing . Both theoretical and practical topics will be included. The main contents are devided into the following units : (I)Fundamental Studies:(a)Transport Phenomena (b)Viscoelastic Properties of Polymer Melt (c)Polymer Compounding and Blending. (II)Practical Studies:(a)Compression Molding (b)Injection Molding (c)Reaction Injection Molding (d)Fiber Formation (e)Membrane Formation.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3323157	Mineral Processing Lab. (11)	2.0	3
<b>Description</b>	The laboratory section of the mineral processing classes are designed to have student obtain hand-on experiences of various mineral processing operations. The lab. includes screening, crushing, grinding operation, settling, size analysis, heavy medium separation, classification, sluicing, electrostatic and magnetic separations, flotation, dewatering and drying.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3324114	Explosives and Blasting	3.0	3
<b>Description</b>	The blasting engineering course focuses on the introduction of explosives and their properties and characteristics, explosives and blasting theories, drilling and blasting design and operations, and environemtnal control of blasting.		
<b>Course</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>



<b>Code</b>			
3403033	Prestressed Concrete Design	3.0	3
<b>Description</b>	This course is aimed at establishing the basic concept of prestressed members to the students ◦ It starts from introducing the high strength materials required by prestressed design , then the calculation of prestress losses are shown ◦ The analysis and design of a flexural member are shown in a complete manner ◦		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3403042	Matrix Structural Analysis	3.0	3
<b>Description</b>	The course contents are divided into 7 major topics: 1. Review the matrix theory; 2.Basic concepts of the matrix structural theory; 3. Stiffness method; 4. Using stiffness method to solve truss problem; 5. Using stiffness method to solve beam problem; 6. Using stiffness method to solve rigid frame problem; 7. Practice of the structural analysis program.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3404053	Computer Aided Design	2.0	2
<b>Description</b>	null		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3404093	Slope Engineering	3.0	3
<b>Description</b>	This course covers various methods of slope stability analyses; selection of methods of analysis and strength parameters;field investigation for landslide problems; design strategies; landslip preventive and protective measures; and slope monitoring systems.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3405132	Introduction to Geoinformatics	3.0	3
<b>Description</b>	The objective of this course is multi-fold. First of all, it offers an unique opportunity to obtain comprehensive understanding about modern geoinformatics. In this course, students will be able to gain insights into the state-of-the-art research, development, and applications in		

	<p>geoinformatics, especially the 3S technologies (RS, GIS, GPS) and their integrations for sophisticated applications such as cyber city implementation and applications. For engineering students, this course is also an effective platform for capacity-building and career extending. The main topics of this course include: 1.Introduction-Geoinformatics at a glance 2.Remote Sensing (RS) .Remote Sensing Fundamentals .Airborne Remote Sensing .Satellite Remote Sensing 3.Geographic Information Systems (GIS) 4.Global Positioning System (GPS) 5.Cyber City Implementation and Applications</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3405134	Spanish II	3.0	3
<b>Description</b>	<p>The focus of this course is to enable students to have basic Spanish abilities and to strengthen the training or drilling of conversation and reading comprehension of the Spanish language. By keeping their interests in studying Spanish, students are expected to have basic communicational skill, basic knowledge of Spanish language (including alphabet, phonetic and grammar) and better understanding of Spanish culture. The course is divided into two parts: Part 1 (Fall Semester), Part 2 (Spring Semester), three credits involved in each semester.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
4236080	System Analysis for Water Resources	3.0	3
<b>Description</b>	<p>Quantitative analytical methods in water resources planning and management; introduction to systems analysis, benefit/cost, multi-objective planning and risk assessment.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
6017107	Statistics for environmental engineers & experimental design	3.0	3
<b>Description</b>	<p>The goals of this class are to utilize the methodology of the statistics to analyze the data generated in environmental area. In addition, basic ideas of experimental design with applications, completely randomized design, randomized block design, estimation and tests, analysis of covariance for designed experiments; factorial experiments and determination of optimum factor combinations are also discussed in this</p>		

	class.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
7905026	English Technical Writing (II)	2.0	3
<b>Description</b>	This one semester course teaches the basic writing skills of technical English to students. A "hands on" approach is emphasized in lectures, class exercises, and homework projects to give the student a strong foundation in formal business and career communication including: memos, letters, extended abstracts, research proposals, journal papers, and conference poster papers. Topics may be covered in a different order than the schedule below.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
7925125	Advanced Geotechnical Engineering(II)	3.0	3
<b>Description</b>	Students who having the basic course trainings of soil mechanics, rock mechanics, and engineering geology are welcome. Major topics of Advanced Geotechnical Engineering [II] consist of (1) Rock Material and Rock Mass (2)Stress and Stength (3)Deformability and Stength (4)Identify Unstable Rock Slope (5)Identify Unstable Rock Tunnel (6)Rock Engineering Design (7) Engineering Case Studies.		

### College of Management (管理學院)

#### Fall Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3701002	Statistics	6.0	6
<b>Description</b>	The purpose of this course is to train student and to provide a background in the theory and methodology of general statistical issues. Topic includes: probability theory, inference, hypothesis testing, regression analysis and variance analysis.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3706002	Production Management	3.0	3

<b>Description</b>	Production and operation management, case study and analysis, and independent study.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3723013	Quality Management	3.0	3
<b>Description</b>	This course lets the students understand the concepts, theories, and areas of quality control, organization and functions of quality department. Besides, the way to manage the products or the service quality, tools and methods of quality control, the way to improve the quality, quality representation method, evaluation of quality control, related regulations and future trends are also included.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
9805001	Management Science	3.0	3
<b>Description</b>	The purpose of this course is talking about how to utilize scientific and systematic approaches to solve management problems. The solution process includes data collection and problem investigation, model formulation, optimal solution derivation, cost and efficiency analysis, system implementation and execution etc. This course mainly contains various application cases. Accordingly, participant can understand how to apply theoretical methods on solving real problems. Computational software is also utilized to solve the formulated models and analyze and interpret the obtained solutions.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
9805003	Information Management	3.0	3
<b>Description</b>	This course provides the knowledge you need to understand the role of information systems in modern organizations, with particular focus on E-commerce and E-business. Along with skills learned in your functional area, knowledge from this course will help you effectively use information technology for solving business problems.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
9805007	Marketing Management	3.0	3
<b>Description</b>	The purpose of this course is try to help students prepare to operate in		

	<p>and contribute to the 21st century. Regardless of whether a person intends to work in a business, for the government, or in a nonprofit organization, the concepts, strategies, and techniques of effective marketing are relevant. This course is: Providing from fundamental concepts through the major tasks associated with marketing to the strategic role of marketing in an organization. Bringing early attention to the global nature of marketing. Emphasizing the similarities as well as the differences between consumer and business marketing. Combining demand forecasting with its logical antecedents-segmentation, targeting, and position. Covering marketing research, after students have been exposed to consumer and business markets and segmentation. Integrating planning, implementation, and evaluation to provide a broad strategic context after students have a grasp of what marketing entails.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3706050	Decision Analysis	3.0	3
<b>Description</b>	<p>This course provides an overview of the basic concepts of decision theory and their applications on the real-world decision problems. Students will learn about the problem identification and modeling, the modeling and estimation of the associated uncertainty, and modeling and evaluation of the utility function.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3736029	Project Investment Analysis	3.0	3
<b>Description</b>	<p>The objective of this course lies in definition of investment projects, investment decision-making, project execution and analysis methods. The subjects includes: the investment environment, investment project evaluation, interest rate and inflation rate, depreciation, income taxes, developing project cash flows, capital budgeting, uncertainty and risk, investment projects and its relationships with economics, management, environment, and politics. Various factors that affect the investment project decision problems are discussed to help decision maker properly resolves investment decision.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5705350	Behavioural Corporate Finance	3.0	3

<b>Description</b>	This course introduces how psychological biases affect managers' financial decision making processes. The psychological biases include excessive optimism, overconfidence, confirmation bias, illusion of control, representativeness, availability bias, anchoring, framing, loss aversion...etc.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5705442	Management Seminar in English	3.0	3
<b>Description</b>	This course teaches students the communication in English on the special topics within the context of management. Students are expected to learn the followings in English: (1) Terminologies commonly used in management; (2) Draft and write-up of English memorandum; (3) Development of meeting materials such as agenda, motions, minutes, etc.; (4) Business proposals and plans; and (6) Contemporary topics and trend in global management issues. Students will be required to make group presentations and discussions on the selected management topics in English.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
9805104	Project Management	3.0	3
<b>Description</b>	This course teaches students the estimations of time and cost when managing a project, the development of project schedule and budget, and other relevant skills in monitoring and controlling the project. The development of project proposal, feasibility study of project investment, project risk assessment, project interface management, and the role of project manager in a project team within an organization will also be discussed.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
9805109	Electronic Management	3.0	3
<b>Description</b>	This course objective is to provide students with knowledge of how modern information technology can help enterprise to 1) improve its efficiency and streamline its business processes. 2) enhance collaboration with its business partners, and 3) gain strategic advantages in the highly competitive business environment. This course will cover 3 major areas of electronic management systems: 1) Functional		

	management systems 2) Enterprise management systems - ERP, and 3) Inter-enterprise management systems - supply chain management system and customer relationship management system.
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### Spring Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3701002	Statistics	6.0	6
<b>Description</b>	The purpose of this course is to train student and to provide a background in the theory and methodology of general statistical issues. Topic includes: probability theory, inference, hypothesis testing, regression analysis and variance analysis.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3706087	Supply Chain and Logistic Management	3.0	3
<b>Description</b>	This course intends to introduce essential topics regarding supply chain and logistic management. Supply chain management is an integrated approach to manage the total flow of manufacturing and distribution channel from supplier to ultimate customer. The contents of this course include the development of supply chain management strategies, logistic management, supply chain management functions, supply chain management performance evaluation, and major challenges of supply chain management. Certain topics related to supply chain management, such as inventory policy, information system integration, and supply contract will also be addresses. This course focuses on both theoretical and practical issues. Real world case study will be an important part of this course.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5705404	Project Management	3.0	3
<b>Description</b>	This course introduces the technique of Critical Path Method (CPM) to manage a project in terms of time / cost estimation, scheduling, budgeting, and other control / monitoring measures on the performance of a project. The role of project manager in an organization will also be discussed. Topics to be covered are: (1) Concept and identification of a project, (2) Project feasibility study and selection criteria, (3) Project		

	scheduling, (4) Budgeting and cost control, (5) Constrained resource scheduling and leveling, and (6) Project evaluation and review technique.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
9805002	Management Accounting	3.0	3
<b>Description</b>	This course deals with management accounting and control both within a micro-behavioural and within an organisational theory perspective. The aim is to provide an understanding of the developments in management accounting and control theory and practice and the implications of critical variables that affect the design, development and operation of management accounting and control systems. Practical aspects of management accounting are mainly examined through computer assisted learning (CAL). Students are expected to cover the prescribed reading on their own, and to perceive the taught seminars as the opportunity to ask questions and to offer their views at any time.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
9805006	Quality Management	3.0	3
<b>Description</b>	This course provides a fundamental understanding of statistical quality control concept. Areas for quality implementation will include functions such as marketing, design, purchasing, production, inspection, etc. This class also enables the students to recognize the foundation to create and sustain an effective organization through total quality management. Finally, the class provides comprehensive focus on six sigma that has been found to improve product, service and process.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
9805008	Financial Management	3.0	3
<b>Description</b>	This course is to build up the financial framework for students when making financial decisions. The focus is on setting out the basic principles of financial management and applying them to the main decisions faced by the financial managers. It helps students to understand various tools of financial management and use them effectively when making investment and financing decisions.		



<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3715001	Time Series Analysis and Process Adjustment	3.0	3
<b>Description</b>	The purpose of this course is to provide students a modern treatment of discrete-time advanced process control (APC) methods based on time series analysis, statistical process control (SPC) and engineering process control (EPC) for Quality Engineering in manufacturing. The topics that will be addressed in this course include: (1) Process Monitoring; (2) Process Adjustment; (3) Discrete-Time Dynamical Processes; (4) ARIMA Time Series Models; (5) Transfer Function Modeling; (6) Optimal Feedback Controllers; (7) EWMA Control; (8) Recursive Estimation and Adaptive Control.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5705303	Behavioural Finance	3.0	3
<b>Description</b>	The empirical and theoretical evidence of the efficient market hypothesis (EMH) has been challenged in the past two decades. Behavioural finance has developed as an approach to try to explain financial market anomalies from the EMH. The aim of this course is to discuss the related financial literature and apply the psychological theory of individual behaviour to the financial markets. Group discussions are needed.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5705447	Customer Relationship Management	3.0	3
<b>Description</b>	This course includes the fundamental theory of data mining techniques and the various applications in different enterprises. These techniques will include classification, association rule, forecasting, pattern recognition, etc.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
9305019	Logistics System Analysis	3.0	3
<b>Description</b>	The focus of this course is on the models and algorithms for logistics system analysis. In addition to discussing the supply and demand sides of logistics systems, this course aims to analyze the equilibrium between supply and demand. The main topics include, but not limited to, network		

	design, analysis, and optimization, queueing theory, network equilibrium assignment, dynamic network analysis, and commercial vehicle operation and vehicle routing and scheduling.
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## College of Design (設計學院)

### Fall Semester

Course Code	Course Name	Credits	Hours
1001001	Physical Education	0.0	12
<b>Description</b>	All students are required to attend two hours per week of Physical Education class. This requirement applies to Freshman Sophomore and Junior students while it is an elective for senior students. For Freshman level, Classes focus on basic physical strength training. For Sophomore and Junior students, classes are interest-oriented, thus giving students the opportunity to select specific activities they are interested in. Choices include Basketball, Volleyball, Table Tennis, Badminton, Bowling, Archery, Golf, Tennis, Gymnastics, Slow pitch, Tai Chi Chuan, Ballroom Dancing, Physical Fitness and martial arts, to mention a few.		
Course Code	Course Name	Credits	Hours
3901009	French	8.0	8
<b>Description</b>	This is a French language course for beginners. By keeping their interests in study French, students are expected to have basic communicational skill, basic knowledge of French language (including alphabet, phonetic and grammar) and better understand French culture. This course contains: 1. Personal expression (names, numbers, body, occupation, age etc.) 2. Family (relatives, house, personality, studying, introduction etc.) 3. daily conversation (give a phone call, thanks, apologize, discussion about weather, Activities, dating, dining, invitation etc.)		
Course Code	Course Name	Credits	Hours
3904502	Chinese & Taiwanese Culture	12.0	24
<b>Description</b>	The course of Chinese is categorized as three individual stages for four		

	<p>years. In the first year, the course focuses on : (a) Basic Sentence Patterns, (b) Basic Conversation, (c) Languages in the Real Life and (d) the phonetic system for the Chinese language. In the second and the third year, the training focuses on paragraph reading and term/character recognition-in addition to the teaching themes set in the first year. Writing courses are also added during this stage. In the fourth year, we add more emphasis on the conversational ability, term/character recognition and reading ability. More culture-related information will be included.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3900004	Architectural Design	48.0	96
<b>Description</b>	<p>This course is organized, as a four-year's program that is arranged around a pattern of eight semesters. The modular teaching structure is: An introduction to basic design problem solving : concepts of point, line, plane, and space organization : principles of unity/variety , order ,balance , proportion ,scale , etc.; orthographic projection and axonometric ; pattern diagramming ; and basic design consequences of human activity. Studio introduction to architectural design problem solving; concepts of architectural aesthetic principles; value drawing techniques; model building; anthropometrics ; and human gathering and circulation patterns. Investigations of visual structures and their order , and exercises to develop ability to communicate about form and space. Explorations of two-dimensional and three-dimensional design through manipulation of the design elements in association with the design principles. Emphasis on materials , techniques , and color/shape relationship.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3901402	Construction Drawing and Practice	2.0	4
<b>Description</b>	<p>1. Graphic standards for working drawing. 2. Drawing preparation and process. 3. Selected shop drawing</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3902013	Building Construction Theory (II)	2.0	2
<b>Description</b>	<p>In this course student can understand the property of general material of</p>		

	building and the principles of building construction, we stress those knowledge related with component composition, that student can used in their design work.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A605001	Research Methodology	3.0	3
<b>Description</b>	The necessity for personal academic research is the key cultural change that postgraduate students will encounter compared with their undergraduate days. Thus, postgraduate students need information and insights to develop the capacity to operate successfully achieving a higher-level degree. To examine these concerns, the course includes: 1. Characteristics of research 2. Intelligence-gathering-the "what" questions 3. Research-the "why" questions 4. Characteristics of good research 5. Basic types of research 6. The craft of doing research 7. Research ethics 8. Research design practice.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A605002	Design Technical I	3.0	3
<b>Description</b>	This is a design studio class, focused on the technical side for topics as Green Building, Building Systems, Digital Design Media, Building Production, Building Reuse, Environment Control, and others were be included. There will have only two or three topics in each semester, depends on the teacher's specialty, and each student needs take two topics in one year.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3903015	Structure Theory	3.0	3
<b>Description</b>	This course intended to provide a clear presentation of the theory and application of structural analysis, the course consists of(1) Analysis of Statically Determinate Structures(2) Deflection of Beams: Conjugate-Beam and Virtual Work Method(3) Deflection of Trusses and Frames: Virtual Work Method(4) Slop-Deflection Equations(5) Moment Distribution Method.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>

3904491	Sustainable Design Studio	6.0	6
<b>Description</b>	<p>Under the double enhanced pressure of the debate and discussion of environment and energy resources of 21st Century, the human living problem is seriously under test; therefore we need to have new thoughts and solutions. Sustainable Design Studio is one of the solutions under the new thoughts. It is taking eternity continuity as priority, a building method for providing resident a suitable living environment from recycling resources, participation of residents and community share.</p> <p>This course contains the philosophy for sustainable design studio, passive design theory, housing system, construction theory, construction material, construction methods and public participation. The way for distribute the class is to give lectures and practical works such as making the structural model to provide students with fundamental concept of sustainable design studio to be able to put into the practical work in the future reality.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3904498	French in Practice	1.0	1
<b>Description</b>	<p>This course is designed to strengthen students' previously required knowledge in French with basic grammatical ideas and sentence patterns reviewed through reading materials appropriate to their levels.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
5211438	Colonial Urbanism and Architecture	3.0	3
<b>Description</b>	<p>In the Human History, we see people struggling for expansion of their living space, desiring of more natural resources. They took some land, made their own territories, and built their own town, becoming cities. One might call them ? Planned cities ? or ? colonial cities ?. Those towns or cities, are totally different in their nature from the towns formed. Therefore, studies on those cities ought to have some different discourses on them. This seminar will be focus on the phenomena since the epoch of Great Discovery, the coming of European to America, Africa and Asia. Europeans at time, how they adapted their new life in the colonies, and the founding of new ideal city in their colonies. The architectural urban phenomena will be the subject of this seminar.</p>		
<b>Course</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>

<b>Code</b>			
5231412	Sustainable Architecture Research & Analysis	3.0	3
<b>Description</b>	The theme of the course is "Sustainable Architecture". It aims to provide a forum to examine and discuss solution-oriented methods for implementing sustainable development, and to stimulate more ideas and useful insights regarding architecture development within the context of sustainability. In an effort to explore and map the challenges and opportunities of sustainable development, this course aims to address the various aspects of architecture & urban development in accordance with the principles of sustainability. These themes will address issues but not limit to, architectural design, ecological and social sustainability, economic and environmental sustainability, environmentalism.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A605213	Seminar on Human Settlements and Vernacular Architecture	3.0	3
<b>Description</b>	This course will teach students how to conduct inter-regional and inter-cultural research on the worldwide human settlements and vernacular architecture from a comparative perspective as based on the paradigm of the built environment as a representation of realities. Various examples of human settlements and vernacular architecture will be analyzed not only according to the natural factors (e.g. climate, landscape, material and tectonics) but also according to the mental constructs of the external environment (e.g. the "Axis Mundi & Cosmic Cross", the "Including & Excluding Structures" and the "Holy & Unholy Zones"). Such an analysis will enable students to understand the intrinsic values of human settlements and vernacular architecture that should be embodied in the establishment of a sustainable built environment for human beings.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A605214	Service Design for Public Buildings and Space	3.0	3
<b>Description</b>	If you could improve one everyday experience in Taipei City, what would it be, and how would you do it? In this class, we ask: What's a service and how are good ones conceived and created? What can we, as designers, contribute to services for public buildings and space? What		

	<p>responsibilities do users as "citizens" rather than "customers" demand of designers? Drawing from my own interest in, research for, and links to, Taipei City agencies and service providers, we'll explore the kinds of relationships that services broker, and practice some key design processes and methods to understand how context of use, stakeholders, storytelling and mapping techniques shape services. In class and through assignments, we'll review a range of real life case studies in Taiwan and elsewhere. The class will be part seminar and part workshop. It's not a production class; instead, assignments will focus on written and sketching exercises, and reading. There will be opportunities to present, and, where succes</p>
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### Spring Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1001001	Physical Education	0.0	12
<b>Description</b>	<p>All students are required to attend two hours per week of Physical Education class. This requirement applies to Freshman Sophomore and Junior students while it is an elective for senior students. For Freshman level, Classes focus on basic physical strength training. For Sophomore and Junior students, classes are interest-oriented, thus giving students the opportunity to select specific activities they are interested in. Choices include Basketball, Volleyball, Table Tennis, Badminton, Bowling, Archery, Golf, Tennis, Gymnastics, Slow pitch, Tai Chi Chuan, Ballroom Dancing, Physical Fitness and martial arts, to mention a few.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3390043	Chinese & Taiwanese Culture	4.0	8
<b>Description</b>	<p>The course of Chinese is categorized as three individual stages for four years. In the first year, the course focuses on : (a) Basic Sentence Patterns, (b) Basic Conversation, (c) Languages in the Real Life and (d) the phonetic system for the Chinese language. In the second and the third year, the training focuses on paragraph reading and term/character recognition-in addition to the teaching themes set in the first year. Writing courses are also added during this stage. In the fourth year, we add more emphasis on the conversational ability, term/character</p>		

	recognition and reading ability. More culture-related information will be included.
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<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3900004	Architectural Design	48.0	96
<b>Description</b>	<p>This course is organized, as a four-year's program that is arranged around a pattern of eight semesters. The modular teaching structure is: An introduction to basic design problem solving : concepts of point, line, plane, and space organization : principles of unity/variety , order ,balance , proportion ,scale , etc.; orthographic projection and axonometric ; pattern diagramming ; and basic design consequences of human activity. Studio introduction to architectural design problem solving; concepts of architectural aesthetic principles; value drawing techniques; model building; anthropometrics ; and human gathering and circulation patterns. Investigations of visual structures and their order , and exercises to develop ability to communicate about form and space. Explorations of two-dimensional and three-dimensional design through manipulation of the design elements in association with the design principles. Emphasis on materials , techniques , and color/shape relationship.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3901008	Design Drawing (二)	2.0	3
<b>Description</b>	<p>The course objective is to train students understanding and fully employing the emerging technology of drawing methods in the architectural design process. The main topics base on CNS standards of Architectural drawing, and contents include: Site analysis, Plan, Section, etc. Finally, a series of exercises seeks to expand students' abilities to utilize various software packages of computer graphics.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3901010	Basic architecture practice	3.0	3
<b>Description</b>	<p>The subject of this course is mainly to recognize the architectural materials and to practice the constructional forms. The purpose is to</p>		



	<p>process the basic knowledge and technical abilities through contact and manipulate real materials, including the verity and quality of materials, manufacturing processes and the cognition, technique and aesthetic of fabricating. Besides, to apply them to the architecture design courses. Five topics will be selected from the field of architectural construction. Content: 1. Introduction to carpentry manipulating technique and process. 2. Introduction to metalworking manipulating technique and process. 3. Introduction to brickwork manipulating technique and process. 4. Introduction to glass manipulating technique and process. 5. Introduction to indoor construction materials' manipulating technique and process.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3902012	Building Construction Theory (I)	2.0	2
<b>Description</b>	<p>In this course student can understand the property of general material of building and the principles of building construction, we stress those knowledge related with component composition, that student can used in their design work.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3903014	Urban Planning Theory	3.0	3
<b>Description</b>	<p>This course is mainly to discuss the role of planning as a form of intervention in the development process, and introduce the role of planning in the allocation and management of a sustainable environment. Thus the course including: 1. Planning, planners and plans 2. The origins: urban growth from 1800 to 1940 3. The seers: pioneer thinkers in urban planning, from 1880 to 1945 4. The creation of the postwar planning machine, from 1940 to 1952 5. National/regional planning from 1945 to 1990 6. Planning for cities and city regions from 1945 to 1990 7. Planning in Western Europe, United States since 1945 8. Settlements into the 21st century.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A605003	Design Technical II	3.0	3
<b>Description</b>	<p>This is a design studio class, focused on the technical side for topics as Green Building, Building Systems, Digital Design Media, Building</p>		

	Production, Building Reuse, Environment Control, and others were be included. There will have only two or three topics in each semester, depends on the teacher's specialty, and each student needs take two topics in one year.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
3903414	Introduction to History of Modern Architecture	2.0	2
<b>Description</b>	null		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A605201	Advanced of building renewal & reuse	3.0	3
<b>Description</b>	The scope of this curriculum encompasses the theories of the management of building projects, including:1. Introduction(The definition of Reuse, Reduce and Recycle).2. Main methodologies and evaluating tools of building-reuse.3. Case study: Mass housing renewal in European countries & Japan.4.Renewal operation of infill-based building components: Case study on Partitions, kitchens& Sanitary spaces5. Relation between Building renewal and urban tissue.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A605206	Environmental Planning and Design	3.0	3
<b>Description</b>	The purpose of this course is to explore the nature of current environmental issues, and further our knowledge about current theories and experiences with the various approaches to environmental planning and design. Our hope is to improve planning and design practice. To examine these concerns, the course includes: 1.Introduction 2.Environmental decision-making 3.Environmental protection policy 4.Sustainable development 5.Alternative approaches to environmental planning and design. 6.Professional practice of environmental planning and design 7.Conclusions.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A605211	Special Issues on Intelligent City	3.0	3
<b>Description</b>	This course introduces graduate students to the newly developed concept about the intelligent cities and how they are planned and implemented.		

	<p>The concept of intelligent city was proposed by the IBM with globalization background. It is a new and innovation research field, which include inter-discipline integration. The course is organized into two parts: Part1 explore the Basic which to form an intelligent city. It will start with classroom lecture, speech and paper reading and using intelligent cities case study around the world as references. We will examine the key components that form an intelligent city. Part2 will use a target community as a practical case study area and use people participation and community enforcement model to propose a prototype of an intelligent city will be. The results will be illustrated and presented to the local community.</p>
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## College of Humanities & Social Science (人文與社會科學學院)

### Fall Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A405003	Special Topics on Trademark Act	3.0	3
<b>Description</b>	<p>Trademark Act is formulated to safeguard trademark rights and the consumers' interest, maintain fair competition of markets, and facilitate normal development of industries and commerce. This course is focusing on the introduction of Trademark Act. Topics will mainly include the basic principle of trademark standard, the integrant part of trademark, the characteristic and the function of trademark, the application procedures, examination and approval, acquisition of the trademark rights and exercises, the procedure of opposition and the dispute processes, remedies for right infringement and so on.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A405109	Patent Drafting	3.0	3
<b>Description</b>	<p>This course teaches a variety of legal doctrines and laws or regulations regarding patent drafting. Primarily, this course focuses on American practices. But, European, Taiwan and China practices are also covered for comparison purposes. Students will be assigned to read court decisions. Technical backgrounds are not required for taking this course. Class participation is also required. Writing assignments regarding</p>		

	patent drafting might be given.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A405128	U.S. Patent Law Seminar	3.0	3
<b>Description</b>	This course will introduce the U.S. Patent Act and cases, including 35 U.S.C. §101-103, 112, as well as the patent system. Students are expected to read assignments before the class, so that they can answer questions and join discussions in class. Students are expected to learn how to read legal English during the course and able to read patent cases on their own.		

### Spring Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
A405005	International IP Agreements & Technology License	3.0	3
<b>Description</b>	This course will illustrate the following issues: (1) IP Business Model and IP Transactions, (2) Anglo-American Contract Law, (3) Definition, Regulation, Types & Management of IP License, (4) License Agreement Auditing for Licensing Business, (5) Technical Cooperation Contract, (6) IP Joint Venture Contract and Articles of Association.		

### General Education (通識課程)

#### Fall Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1404003	Chinese	4.0	4
<b>Description</b>	"Chinese" is the course where we make full use of our native languages to enjoy literary works, to enrich our cultural taste, to develop our thinking and even to elevate human cultivation. This four-credit course is set for the freshman students: with 2 credits in each of the two semesters of the school year. In the first semester, the course covers important articles in literature, in the hope for the student learners to cultivate better ability to taste literary works when they have more vivid sense on the language. With fuller knowledge on what literature is about,		

	they are expected to try creative writings. For the second semester, the course is mainly focused on the writings on thoughts. It is our expectation that throughout the reading and analysis of various great schools of philosophy, the student learners are given the opportunity to explore the huge minds of philosophers, who will thus be imitated and followed. Through the internalization, the students might benefit themse		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1404003	Chinese	4.0	4
<b>Description</b>	"Chinese" is the course where we make full use of our native languages to enjoy literary works, to enrich our cultural taste, to develop our thinking and even to elevate human cultivation. This four-credit course is set for the freshman students: with 2 credits in each of the two semesters of the school year. In the first semester, the course covers important articles in literature, in the hope for the student learners to cultivate better ability to taste literary works when they have more vivid sense on the language. With fuller knowledge on what literature is about, they are expected to try creative writings. For the second semester, the course is mainly focused on the writings on thoughts. It is our expectation that throughout the reading and analysis of various great schools of philosophy, the student learners are given the opportunity to explore the huge minds of philosophers, who will thus be imitated and followed. Through the internalization, the students might benefit themse		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1410088	Introduction to Law	2.0	2
<b>Description</b>	Introduction of Law is to introduce the theory of law and to promote students' interest to study law. Since the field of law is very broad but the time is limited, this course can briefly explain common principles of law, complex phenomena of law, etc. The main purpose of this course is to let students catch the concept of common principles of "lex scripta." Also, this course aims to promote students' knowledge about law, thus cultivating their spirit of abiding by law. This course will introduce the basic concept and theory of law first. Then students will be given logical training through discussion. Besides, the general cases and problems of law will be covered as well. Through this course, students can not only		

	get correct concepts of law, but learn to protect their/others' right.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1410171	Philosophy introduction	2.0	2
<b>Description</b>	<p>This course is designed for student who is not disciplined in philosophy. As an introduction, we begin at the origin of western philosophy, the philosophical questions and finally, the relationship of human life and philosophy. Philosophy takes place when human being thinking of himself. Man by nature desire to know himself as well as the external world. And due to this love of wisdom, men can be critical to knowledge and be passionate toward truth. Eventually, grasping the spirit of western philosophy , we can view our life in quite a different view. In our time, facing the world of international, we should better understand the western culture, which is rooted in philosophy.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1415002	Introduction to sociology	2.0	2
<b>Description</b>	<p>The purpose of this course is to understand sociology. It covers theory and practicability, and make students consider the current society, and understand the generated factors of diversity . Expect students' study can have more for the community as a whole different way of thinking, in order to strengthen their academic needs, not only has the theoretical depth of insight, but also on the substance applied to the management level.</p>		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1401036	Calculus	6.0	8
<b>Description</b>	<p>This course aims at developing comprehension of Derivation and Integral 、activating capabilities of Logic Inference and Induction 、enlightening confidence and independence 、strengthening calculating abilities with an emphasis on its application and diagram 、furnishing a sound basis for future specialty. The content includes: 1.Limits and Continuity, 2.Derivative and Application, 3.Indefinite and Definite Integral, 4.Transcendental Functions and their Inverses, 5.Techniques of Integration, 6.Indeterminate Forms and Improper Integral, 7.Application of Integration, 8.Basic Vector Analysis, 9.Partial Derivative, 10.Multiple</p>		

	Integration, 11.Infinite Series.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1419974	Elective Curriculum of Liberal Arts Education : Nomocracy	2.0	2
<b>Description</b>	Democracy and nomocracy are the core curriculum, focusing on enhancing the quality of citizens and promoting the related courses in the political system, the operation of the law practices and so on.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1419976	Elective Curriculum of Liberal Arts Education : Nature	2.0	2
<b>Description</b>	n		

### Spring Semester

<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1419974	Elective Curriculum of Liberal Arts Education : Nomocracy	2.0	2
<b>Description</b>	Democracy and nomocracy are the core curriculum, focusing on enhancing the quality of citizens and promoting the related courses in the political system, the operation of the law practices and so on.		
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Hours</b>
1419975	Elective Curriculum of Liberal Arts Education : Society	2.0	2
<b>Description</b>	To develop the basic knowledge of society, economic and management to our students, improve them the cognition of individual and society, and the abilities of analysis and understanding, then enhance the social adjustment ability.		