105-2 Courses taught in English(105 學年度第 2 學期全英文授課課程表)

No. 編號	Department 開課系所	Course Code 課號	Course Title 科目名稱	Required/ Elective 必修/選修	Credit Points 學分數	Instructor 授課老師	Course Description 課程說明
1	Institute of Mechanical and Electro-Mechanical Engineering (動力機械工程系機械與機電工程碩士班)	2333	Practical Mechanism Innovation Design (機構創新設計實務)	Elective 選修	3	Long-Chang, Hsieh 謝龍昌	Course Outline
2	Institute of Mechanical and Electro-Mechanical Engineering (動力機械工程系機械與機電工程碩士班)	2334	Theory of Gearing (齒輪原理)	Elective 選修	3	Shinn-Liang,Chang 張信良	Course Outline
3	Institute of Mechanical and Electro-Mechanical Engineering (動力機械工程系機械與機電工程碩士班)	2335	Micro-Nano Fabrication and Measurement (微奈米製造與檢測)	Elective 選修	3	Chin-Chung,Wei 魏進忠	Course Outline
4	Institute of Mechanical and Electro-Mechanical Engineering (動力機械工程系機械與機電工程碩士班)	2337	Advanced in Nano/Micro Tribology (高等微奈米磨潤)	Elective 選修	3	Jeng-Hao, Hung 洪政豪	Course Outline
5	Institute of Mechanical Design Engineering (機械設計工程系碩士班)	0259	Design and Sensors of Nano MEMS (微奈米機電設計與感測器)	Elective 選修	3	Chi-Ting,Ho 何智廷	Course Outline

105-2 Courses taught in English(105 學年度第 2 學期全英文授課課程表)

No. 編號	Department 開課系所	Course Code 課號	Course Title 科目名稱	Required/ Elective 必修/選修	Credit Points 學分數	Instructor 授課老師	Course Description 課程說明
6	Institute of Automation Engineering (自動化工程系碩士班)	0049	Application for Digital Image Processing (數位影像處理實務)	Elective 選修	3	Kuang-Chyi,Lee 李廣齊	Course Outline
7	Institute of Automation Engineering (自動化工程系碩士班)	0050	Creation and Invention (創意與發明)	Elective 選修	3	Roug-Feng,Tsai 蔡榮鋒	Course Outline
8	Institute of Automation Engineering (自動化工程系碩士班)	0054	Engineering Analysis (工程分析)	Elective 選修	3	Meng-Tse,Lee 李孟澤	Course Outline
9	Institute of Mechanical and Computer-Aided Engineering (機械與電腦輔助工程系碩士班)	0017	Surface Engineering （表面工程）	Elective 選修	3	Yin-Yu, Chang 張銀祐	Course Outline
10	Graduate Institute of Aeronautical and Electronic Engineering (飛機工程系航空與電子科技碩士班)	0319	Flight Safety (飛航安全)	Elective 選修	3	Arnold,Wang 王士嘉	Course Outline
11	Graduate Institute of Aeronautical and Electronic Engineering (飛機工程系航空與電子科技碩士班)	0318	Aircraft Stability and Control (飛機穩定性與控制)	Elective 選修	3	Wen-Chi,Lu 呂文祺	Course Outline

105-2 Courses taught in English(105 學年度第 2 學期全英文授課課程表)

No. 編號	Department 開課系所	Course Code 課號	Course Title 科目名稱	Required/ Elective 必修/選修	Credit Points 學分數	Instructor 授課老師	Course Description 課程說明
12	Institute of Electrical Engineering (電機工程系碩士班)	0145	Low Power Methodology For System-on-Chip Design (低功率系統晶片設計)	Elective 選修	3	Chi-Chia,Sun 宋啟嘉	Course Outline
13	Master of Electro-Optical and Materials Science (光電工程系光電與材料科技碩士班)	0308	Optical engineering in crystal (晶體光電工程)	Elective 選修	3	Wei-Qun, Chuang 莊為群	Course Outline
14	Institute of Computer Science and Information Engineering (資訊工程系碩士班)	0128	Cloud Operating Systems (雲端作業系統)	Elective 選修	3	Ming-Shen,Chien 簡銘伸	Course Outline
15	Institute of Computer Science and Information Engineering (資訊工程系碩士班)	0129	Mobile Computing and Applications (行動計算與應用)	Elective 選修	3	Ji-Han,Jiang 江季翰	Course Outline

105-2 Courses taught in English(105 學年度第 2 學期全英文授課課程表)

No. 編號	Department 開課系所	Course Code 課號	Course Title 科目名稱	Required/ Elective 必修/選修	Credit Points 學分數	Instructor 授課老師	Course Description 課程說明
16	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0361	Information Management (資訊管理)	Elective 選修	3	Chih-Chin,Liang 梁直青	Course Outline
17	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0360	Behavioral Finance (行為財務)	Elective 選修	3	Chi-Lin,Lu 呂麒麟	Course Outline
18	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0364	Global Marketing (全球化行銷)	Elective 選修	3	Yi Hsu 徐怡	Course Outline
19	Institute of Industrial Engineering and Management (工業管理系工業工程與管理碩士班)	0339	Service Quality Management (生產管理與實務)	Elective 選修	3	Po-Chieng,Hu 胡伯潛	Course Outline
20	Institute of Industrial Engineering and Management (工業管理系工業工程與管理碩士班)	0340	Applied Statistics (應用統計學)	Elective 選修	3	Jyun-Ping,Huang 黃俊平	Course Outline

105-2 Courses taught in English(105 學年度第 2 學期全英文授課課程表)

No. 編號	Department 開課系所	Course Code 課號	Course Title 科目名稱	Required/ Elective 必修/選修	Credit Points 學分數	Instructor 授課老師	Course Description 課程說明
21	Institute of Industrial Engineering and Management (工業管理系工業工程與管理碩士班)	0338	Simulation (模擬學)	Elective 選修	3	Chih-Hsiung,Hu 胡智熊	Course Outline
22	Institute of Industrial Engineering and Management (工業管理系工業工程與管理碩士班)	0337	Networks and Logistics (網路與運籌)	Elective 選修	3	Yi-Chih,Hsieh 謝益智	Course Outline
23	Institute of Information Management (資訊管理系碩士班)	0092	Seminar on Information Management(2) (資訊管理專題研討(二))	Required 必修	2	Hung-Hsu,Tsai 蔡鴻旭	Course Outline
24	Institute of Information Management (資訊管理系碩士班)	0097	Database Management (資料庫管理)	Elective 選修	3	Yung-Tsung, Hou 侯雍聰	Course Outline
25	Institute of Department of Finance (財務金融系碩士班)	0035	The Theory and Practice of Investment (投資學理論與實務)	Required 必修	3	Ya-Wen,Lai 賴雅雯	Course Outline

Courses taught in English

Course title 課程名稱	**Practical Mechanism Innovative Design**（機構創新設計實務）
Course Description 課程概述	1. Introduction of mechanisms 2. Basic principles of mechanisms 3. Mobility of mechanisms 4. Creative design methodology 5. Learn how to innovate new mechanisms to avoid the relevant patent.
Course objective 課程目標	Teaching students to understand the basic principles of mechanisms, and further to learn how to innovate new mechanisms to avoid the relevant patent.
Competence 核心能力	1. Understand the basic principles of mechanisms. 2. Have the ability of innovate new mechanisms to avoid the relevant patent.
Prerequisite Course(s) 先修課程或先備能力	Mechanisms 機構學
Teaching Strategies 教學方法	1. Classroom teaching 2. Case study 3. Problem-guided learning 4. Project-guided learning
Course Material 課程教材	Creative design of mechanical devices (Hong-Sen Yan, Springer, Singapore.)
Grading 評量方式	1. Test (50%) 2. Paper reading and presentation (20%) 3. Project presentation (30%)
References 參考書目	Mechanisms-Theory and applications (Hong-Sen Yan, McGraw Hill,　Singapore.)
Contact with Teacher 老師聯絡資訊	Long-Chang Hsieh (謝龍昌)　Professor 0910-764467

Course Outline 課程進度	
Chapter 1　Introduction 　1.1　Design 　1.2　Design Peocess 　1.3　Creative Design **Chapter 2　Mechanical devices** 　2.1　Mechanical Members 　2.2　Joints 　2.3　Chains, Mechanisms, and Structures	

| Remarks 備註 | |

Courses taught in English

Course title 課程名稱	Theory of Gearing (齒輪原理)
Course Description 課程概述	Gears are popularly applied in industry. Engineers need the knowledge how to generate the tooth profile according to the manufacturing machines. The tooth contact analysis between the meshing gears is also investigated in the class.
Course objective 課程目標	The main target is to build up the mathematical model of the gears. Then, the students can investigate the meshing of gears with axes assembly errors.
Competence 核心能力	1. Matrix Operation 2. Differential Geometry 3. Vector Operation 4. Programming
Prerequisite Course(s) 先修課程或先備能力	Engineering Mathematics
Teaching Strategies 教學方法	1. Class Teaching 2. Project Study
Course Material 課程教材	Theory of Gearing, Litvin
Grading 評量方式	1. Examination 2. Paper Reading 3. Project
References 參考書目	Gear geometry and applied theory, Litvin Noncircular gears : design and generation, Litvin
Contact with Teacher 老師聯絡資訊	05-6315440

Course Outline 課程進度	
1. Coordinate Transformation 2. Transformation of Motion 3. Plane Curves 4. Conjugate Shapes	1. Plane Gearing Analysis 2. Basic Kinematic Relations of Plane Gearings and Their Application 3. Generation of Conjugate Shapes 4. Project Study

Remarks 備註	

Courses taught in English

Course title 課程名稱	Micro-Nano Fabrication and Measurement（微奈米製造與檢測）
Course Description 課程概述	Micro and nano scale fabrication are became more important in applications and technologies. Thin film is wildly used on sensors, tools, and composite materials. These applications gradually change our life in transmission devices, intelligent control, energy… etc. The course will introduce applications and methods of micro-nano fabrication, and how to measure relative properties.
Course objective 課程目標	The purpose of the course is to build the basic concept of micro-nano fabrication and measurement for graduates and PHD students. How to process fabrication and properties measurements. Industry application and experiments are also included in order to strengthen the studying effect.
Competence 核心能力	Basic physical and chemical concepts.
Prerequisite Course(s) 先修課程或先備能力	Basic physics and chemistry
Teaching Strategies 教學方法	1. Teaching by slides 2. Video 3. Practice (solar cell, hardness measuring) 4. Laboratory visit
Course Material 課程教材	Self-edition material
Grading 評量方式	1. regular test 20% 2. Mid test 30% 3. Homework 20% 4. Final presentation and report 30%
References 參考書目	Non
Contact with Teacher 老師聯絡資訊	Dr. Chin-Chung Wei Email: ccwei@nfu.edu.tw Phone:+88656315414

Course Outline 課程進度	
A. Fabrication Technology (Before Mid test) B. Measuring Technology (After Mid test)	1. Introduction to nano technology 2. Atomic force microscopy measurement and fabrication 3. Coating and modification 4. MEMS process 5. Mechanical properties measurement by

	micro-nano method
	6. Surface morphology and residual stress measurement
	7. Material structure and elements measurement

Remarks 備註	

Courses taught in English

Course title 課程名稱	Advanced in Nano/Micro Tribology（高等微奈米磨潤）
Course Description 課程概述	This course focuses on learning the expertise of adhesion; microfriction and microwear for understanding the phenomena of macro components in friction and wear so that as the goal of improving component performance.
Course objective 課程目標	Objective for educating students to know the application of microscopic friction, wear, lubrication and with learning the correlation between Macro-Tribology and Micro/Nano-Tribology.
Competence 核心能力	1. Develop students' inter-disciplinary knowledge in Mechanical and Electro-Mechanical (Microtribology Engineering). 2. Develop students' capabilities in writing academic articles. 3. Develop students' capabilities in innovative thinking and problem-analysis with structural and systematic. 4. Develop students' capabilities in data application, international trend of mechanical technology comprehension, research and innovation.
Prerequisite Course(s) 先修課程或先備能力	No
Teaching Strategies 教學方法	Teaching materials: Self-made Teaching methods: Teaching in the classroom and laboratory Teaching resources: Laboratory equipment in teaching and learning
Course Material 課程教材	Self-made teaching materials
Grading 評量方式	Quiz, Mid-term exam, Final exam
References 參考書目	Introduction to Tribology (Writer: Bharat Bhushan ; ISBN: 0471158933)
Contact with Teacher 老師聯絡資訊	05-6315428 jhhorng@gmail.com

Course Outline 課程進度	
CHAPTER 1 ADHESION 1.1 Introduction 1.1.1 What is adhesive force? 1.1.2 What is the adhesive? 1.2 Solid-solid contact 1.3 Liquid-mediated contact CHAPTER 2 SURFACE FILM 2.1 Soft film	

Remarks 備註	

Courses taught in English

Course title 課程名稱	Design and Sensors of Nano MEMS（微奈米機電設計與感測器）
Course Description 課程概述	The course in the science of miniaturization; that is, the science of making very small things. This science comprises an intimate understanding of the intended application, knowledge of the different manufacturing options, familiarity with all materials choices, and an understanding of scaling laws. Miniaturization techniques surveyed are both top-down methods, in which one builds down from the large to the small, and bottom-up methods, in which one builds up from the small to the large. Top-down miniaturization methods and materials surveyed include micromachining with single-crystal and polycrystalline Si and other micromachining methods and materials based on lithography as well as nonlithographic miniaturization. In dealing with micromachining techniques borrowed from the electronics industry , we emphasize those that differ most from standard processes and materials used in regular integrated circuit (IC) and hybrid manufacturing. Although miniaturization and IC fabrication methods are intertwined, in miniaturization science, a much wider variety of processes, more and different materials, and other applications are considered.
Course objective 課程目標	1. Introduction 2. First-Pass Introduction to Microfabrication 3. Review of Essential Electrical and Mechanical Concepts 4. Electrostatic Sensing and Actuation 5. Thermal Sensing and Actuation 6. Piezoresistive Sensors 7. Piezoelectric Sensing and Actuation 8. Magnetic Actuation 9. Summary of Sensing and Actuation Methods 10. Bulk Micromachining and Silicon Anisotropic Etching 11. Surface Micromachining 12. Process Synthesis:Putting it All Together
Competence 核心能力	Learn about miniaturized science courses that include a deep understanding of the intended application, an understanding of the different manufacturing options, a familiarity with all material choices, and an understanding of scaling laws. Emphasizing those techniques that are different from the standard processes and materials used in conventional integrated circuits (ICs) and hybrid manufacturing.
Prerequisite Course(s) 先修課程或先備能力	
Teaching Strategies 教學方法	投影片、企業參訪、理論與實務教學
Course Material 課程教材	書名：Foundations of MEMS、教材語系：英文、ISBN：978-0-13-249736-7、作者：Chang Liu、出版社：Angshuman Chakraborty

Grading 評量方式	期中考 期末考 期末報告
References 參考書目	Fundamentals of MICROFABRICATION
Contact with Teacher 老師聯絡資訊	研究室：綜一館七樓 BGA0791

Course Outline 課程進度	

期中考前

Chapter 1 Introduction

　1.0 Preview

　1.1 The History of MEMS Development

　1.2 The Intrinsic Characteristics of MEMS

　1.3 Devices:Sensors and Actuators

Chapter 2 First-Pass Introduction to Microfabrication

　2.0 Preview

　2.1 Overview of Microfabrication

　2.2 Essential Overview of Frequently Used

Microfabrication Processes

　2.3 The Microelectronics' Fabrication Process Flow

　2.4 Silicon-Based MEMS Processes

　2.5 Packaging and Integration

　2.6 New Materials and Fabrication Processes

　2.7 Process Selection and Design

Chapter 3 Review of Essential Electrical and

Mechanical Concepts

　3.0 Preview

　3.1 Conductivity of Semiconductors

　3.2 Crystal Planes and Orientations

　3.3 Stress and Strain

　3.4 Flexural Beam Bending Analysis Under Simple

Loading Conditions

　3.5 Torsional Deflections

　3.6 Intrinsic Stress

　3.7 Dynamic System,Resonant Frequency,and

Quality Factor

　3.8 Active Tuning of Spring Constant and Resonant

Frequency

　3.9 A list of Suggested Courses and Books

Chapter 4 Electrostatic Sensing and Actuation

　4.0 Preview

　4.1 Introduction to Electrostatic Sensors and

期中考後

Chapter 7 Piezoelectric Sensing and Actuation

　7.0 Preview

　7.1 Introduction

　7.2 Properties of Piezoelectric Materials

　7.3 Applications

Chapter 8 Magnetic Actuation

　8.0 Preview

　8.1 Essential Concepts and Principles

　8.2 Fabrication of Micro Magnetic Components

　8.3 Case Studies of MEMS Magnetic Actuators

Chapter 9 Summary of Sensing and Actuation

Methods

　9.0 Preview

　9.1 Comparison of Major Sensing and Actuation

Methods

　9.2 Other Sensing and Actuation Methods

Chapter 10 Bulk Micromachining and Silicon

Anisotropic Etching

　10.0 Preview

　10.1 Introduction

　10.2 Anisotropic Wet Etching

　10.3 Dry Etching and Deep Reactive Ion Etching

　10.4 Isotropic Wet Etching

　10.5 Gas Phase Etching

　10.6 Native Oxide

　10.7 Special Wafers and Techniques

Chapter 11 Surface Micromachining

　11.0 Preview

　11.1 Basic Surface Micromachining Processes

　11.2 Structural and Sacrificial Materials

　11.3 Acceleration of Sacrificial Etch

　11.4 Stiction and Anti-stiction Methods

Chapter 12 Process Synthesis:Putting it All

Remarks 備註	

Courses taught in English

Course title 課程名稱	Application for Digital Image Processing（數位影像處理實務）
Course Description 課程概述	To teach the students to learn the methods of digital image processing for the application of industry.
Course objective 課程目標	To teach the digital image processing methods of convolution, edge detection, contour following, Hough transform, LSM etc.
Competence 核心能力	Algorithm of Image Processing, MATLAB Programming
Prerequisite Course(s) 先修課程或先備能力	Calculus, Engineering Mathematics
Teaching Strategies 教學方法	Oral, Lab, Report
Course Material 課程教材	R.C. Gonzalez and R.E. Woods , Digital Image Processing, 3rd Edition, Pearson Education.
Grading 評量方式	Lab 40%, Midterm 30%, Final 30%
References 參考書目	Hand-out
Contact with Teacher 老師聯絡資訊	kclee@nfu.edu.tw, 05-6315379

Course Outline 課程進度	
Introduction to image processing Convolution methods Edge Detection methods Contour Following method Hough Transform method	LSM Straightness Roundness Ellipticity
Remarks 備註	

Courses taught in English

Course title 課程名稱	Creation and Innovation（創意與發明）
Course Description 課程概述	The course allows flexible options in different aspects of innovation and recreation. Three ~ five student may organize a group and focuses a subject to present the history, development, future application on ECO, energy saving, 3D printing, and engineering, commercial & practical application in present and future life. The course starts from important existing inventions to discover the research background, theory, difficulty in marketing etc. The theories of TRIZ will be mentioned to summarize the invention principles.
Course objective 課程目標	to describe the properties of existing problems to discover the disadvantage of existing product or problems to summarize existing solutions to organize a group to discuss the problems in different aspects to think with TRIZ theoreyI to integrate the possible suggestions
Competence 核心能力	■Problem description ■Communication in and between the groups。 ■Group coordination 。 ■Innovation thinking of existing technique or products (TRIZ)
Prerequisite Course(s) 先修課程或先備能力	NONE
Teaching Strategies 教學方法	The course concentrates on the team project in observation, information collection, reports, and Q&A, especially on discussion and suggestions.
Course Material 課程教材	Purposely prepared
Grading 評量方式	Group project Presentation Discussion Feed Back
References 參考書目	NONE
Contact with Teacher 老師聯絡資訊	X5385 Room 1593
Course Outline	

課程進度	
Chapter 1 : Introduction	Chapter 10 : Iot and its application I
Chapter 2 : Case studies i: bicycle, instant noodle, Walkman, MP3	Chapter 11 : Iot and its application II
	Chapter 12 : Iot and its application III
Chapter 3 : Case studies ii: airplane, submarine	
Chapter 4 : Case studies iii: Development of car and its accessories	Chapter 13 Final report and discussion I
	Chapter 14 Final report and discussion II
Chapter 5 : Case studies iv: Air conditioner and refrigerator	Chapter 15 Final report and discussion III
	Chapter 16Final report and discussion IV
Chapter 6 : Discussion I	
	Chapter 17 Summary and Feedback I
Chapter 7 : TRIZ I: daily living tool	Chapter 18 Summary and Feedback II
Chapter 8: TRIZ II: stationary	
Chapter 9 : Discussion II	

Remarks 備註	

Courses taught in English

Course title 課程名稱	Engineering Analysis（工程分析）
Course Description 課程概述	If an engineer asked to solve an engineering problem (usually a physical nature), they first have to formulate the problem as a mathematical expression in terms of variable, functions, equations…and so on. Such an expression is known as a "mathematical model" to the given problem.
Course objective 課程目標	In this course, engineering analysis, it is a training to establish the connection between "real physic phenomenon" and its "mathematical model" in order to solve (and to analyze) engineering problems. It requires all four phases: 1.Obsvering- Observe the target's behavior and make assumptions 2. Modeling- The transition from physical situation to its mathematical formulations 3. Solving- The solution by a mathematical method (skill) 4. Examination- The physical interpretation of the result
Competence 核心能力	Transfer a engineering problem into mathematical model then solve it
Prerequisite Course(s) 先修課程或先備能力	Physics, Calculus, Engineering Mathematics
Teaching Strategies 教學方法	In-class notes and Case studies
Course Material 課程教材	Tailor-made teaching materials
Grading 評量方式	In-class Exams 15%*2, Mid-term Exam 30%, Final Exam 30%, Roll call 10%
References 參考書目	Advanced Engineering Mathematics, 10th edition, Erwin Kreyszig, Wiley
Contact with Teacher 老師聯絡資訊	mtlee@nfu.edu.tw, 05-6315388

Course Outline 課程進度

Part-1: The Introduction to "Modeling"	Part-5: Non-homogeneous ODE
Part-2: 1st Order ODE Models	Part-6: Non-homogeneous ODE Models – Forced Oscillations
Part-3: 2nd Order Homogeneous ODE	Part-7: Linear System of ODE
Part-4: 2nd Order Homogeneous ODE Models – Free Oscillations	Part-8: Linear System of ODE Models – Multi-Systems Interaction

Remarks 備註	

Courses taught in English

Course title 課程名稱	Surface Engineering（表面工程）
Course Description 課程概述	Recent advances in surface engineering and coating technologies have led to the development of new nanostructured and nanocomposite coatings that can meet the increasingly multifunctional application. Thin film coating technology is rapidly advancing. The performance demands on all types of thin film materials are continuously increasing. To meet these demands, thin film coatings and structures are becoming more sophisticated with engineered microstructure and properties. Some of these coatings are truly super-hard and -lubricious, hence are well-suited for demanding transportation and green manufacturing applications. In this course, plasmas in vacuum deposition processes, various deposition techniques including Chemical Vapor Deposition (CVD) and Physical Vapor Deposition (PVD). The course will also provide a general overview of advanced tools/techniques used in the characterization and testing of these coatings.
Course objective 課程目標	The main objective of this course is to provide the students with usable information on: _ surface engineering processes _ new and advanced deposition processes for thin film coatings _ thin film microstructures and applications _ relationships between deposition process parameters and thin film microstructure _coating growth processes _ structure characterization of composition, bonding, and microstructure _ introduction of plasmas in thin film deposition.
Competence 核心能力	1. Ability to perform surface engineering design 2. Ability to design and implement vacuum coating processes 3. Ability to solve practical surface engineering problems 4. Ability to analyze the structure of the surface treated materials
Prerequisite Course(s) 先修課程或先備能力	Prerequisite material will be reviewed briefly at the beginning of each course. Basic understanding of manufacturing processes and materials science is necessary.
Teaching Strategies 教學方法	1. lectures in class 2. Interactive discussion learning 3. Experiment and operation 4. Project study
Course Material 課程教材	Handbook of Deposition Technologies for Films and Coatings(3rd Edition) Edited by: Peter M. Martin. eBook ISBN: 9780815520320
Grading 評量方式	1. Quiz and Homework: 20%. 2. Midterm Exam. and/or report: 30%. 3. Final Exam. and/or report: 30%. 4. Class Attendance and Discussion: 20%.

References 參考書目	Handbook of Physical Vapor Deposition (PVD) Processing: Film Formation, Adhesion, Surface Preparation and Contamination Control, Donald M. Mattox, Noyes Data Corporation/Noyes Publications.
Contact with Teacher 老師聯絡資訊	E-mail: yinyu@nfu.edu.tw Tel: +886-56315332 Office: DEPARTMENT OF MECHANICAL AND COMPUTER-AIDED ENGINEERING / Room C12
Course Outline 課程進度	
W1 W2~W3 W4 W5~W6 W7~W8 W9 W10~W11 W12~W13 W14 W15~16 W17 W18	🔶 *Surface Engineering – Introduction* 🔶 *Deposition Technologies: An overview* 🔶 *Plasmas in vacuum deposition processes* 🔶 *Surface preparation for coating deposition processes* 🔶 *Evaporation: processes, microstructures, and mechanical properties* Midterm Examination 🔶 *Sputter deposition processes* 🔶 *Ion plating and CAE* 🔶 *Chemical Vapor Deposition (CVD)* 🔶 *Plasma-Enhanced Chemical Vapor Deposition of Functional Coatings* 🔶 *Nanocomposite coatings for severe applications* 🔶 *Project study* *Final Examination*
Remarks 備註	

Course title 課程名稱	Introduction of Aviation Safety（飛航安全）
Course Description 課程概述	Air transport will continue to grow. It has a good relative safety record but public perception focuses on total accidents rather than relative safety. This has led to the setting of ambitious new safety targets for air transport, whose attainment will require improved knowledge of causes of accidents and better understanding of the effects of new technologies and procedures. Human factors and operational environments are key elements while aircraft design, construction and maintenance, together with operations and accident mitigation, also play important roles. During the lectures a variety of projects relating to these matters were presented.
Course objective 課程目標	Understand and implement the process of accident investigation and • This course covers all aspects of investigation from applicable rules and regulations through investigation technology, analysis and reports. • The participant develops an understanding of the entire investigation process and is well prepared to participate in future investigations.
Competence 核心能力	The abilities and skills a student should learn in accident investigation of all aspects of industries – but they are beneficial to apply, and sometimes originate, in the workplace.
Prerequisite Course(s) 先修課程或先備能力	This course is for individuals who may wish becoming involved in future accident investigations in any capacity and need to understand basic investigation technology.
Teaching Strategies 教學方法	Oral Lecture, Case Method and Panel Discussion
Course Material 課程教材	Aircraft Accident Investigation, April 24, 2006by Richard Wood (Author), Robert Sweginnis (Author)
Grading 評量方式	Case study presentation and group report writing
References 參考書目	Lecturer's hand out.
Contact with Teacher 老師聯絡資訊	Arnold Wang, Phone (O)05-631-5538, E-mail: arnold@nfu.edu.tw

Course Outline 課程進度	
1. Introduction of aircraft accident investigation	9. Interviewing Witnesses
2. The Civil Investigation Process	10. Behavior of Materials
3. International Investigation Procedures (ICAO)	11. Using the Global Positioning Satellite (GPS)

4. Preparing for Investigation	System
5. Safety at the Crash Site	12. Aircraft Performance Factors
6. Priorities and Initial Actions	13. Computers and Simulation
7. Investigation Techniques for: Engines, Structures, Fire, Aircraft Systems, Instruments, and Recording Devices	14. Human Factors and Accident Pathology
	15. Analytical Techniques
	16. Reporting Requirements
8. Wreckage Recovery and Reconstruction	17. Construction of Reports
	18. Investigation Management.

Remarks 備註	

Course title 課程名稱	Aircraft Stability and Control (飛機穩定性與控制)
Course Description 課程概述	This course gives a preliminary knowledge for further investigation in flight dynamic analysis and control law design of fixed-wing aircraft. The material covers the basic knowledge of aerodynamics, aircraft dynamics and generic flight control design issues. Flight mechanics is the major topics in this course.
Course objective 課程目標	1. Familiar with aircraft dynamics with configurations 2. Understanding flight dynamics in equations 3. Analyzing aircraft dynamics with software tools
Competence 核心能力	The abilities and skills should be learned in this course are to apply physics and mathematics to understand the dynamics of aircraft, and evaluate their stability with classical control theory.
Prerequisite Course(s) 先修課程或先備能力	1. Dynamics 2. Advanced mathematics 3. Classic control theory
Teaching Strategies 教學方法	Oral Lecture, Case Method and Panel Discussion
Course Material 課程教材	Flight Stability and Automatic Control, 2nd Ed., Robert C. Nelson, McGraw-Hill, ISBN 978-0070462731. 1992.
Grading 評量方式	Home assignments, mid-term report and final report and oral presentation.
References 參考書目	Lecturer's hand out.
Contact with Teacher 老師聯絡資訊	Wen-Chi Lu Phone (O)05-631-5545, E-mail: luwenchi@nfu.edu.tw

Course Outline 課程進度

1. Introduction to aircraft dynamics and stability (1 week)
2. The Atmosphere and Aerodynamics (1 weeks)
3. Static Stability and Control (3 weeks)
4. Mid-term report (1 week)
5. Rigid Equations of Motion and Stability Derivatives (3 weeks)
6. Flying Qualities (1 week)
7. Stability Augmentation (1 week)
8. Autopilot Design (1 week)
9. Final Report (1 week)

Remarks 備註

Course title 課程名稱	Low Power System-on-a Chip Design(低功率系統晶片設計)
Course Description 課程概述	This course is designed for graduate students who are interested in Low Power system design techniques. The course begins by introducing the history of VLSI and the recent trend of VDSM technology and future 3D-IC design issues. The sources of power consumption, systematically covers methodologies from the lower circuit level to higher abstraction level. Topics will include challenges of VDSM technology, power estimation methodologies, and power reduction methods at various design levels. Moreover, several states-the-art researches for energy efficient computing and Low Power architecture will be assigned as a small colloquium for students. In the meantime, a Lab about how to use Synopsys Design Compiler with the Low Power profile UPF model will be demonstrated.
Course objective 課程目標	The objective of Low Power System-on-a Chip Design is a guidance how power measure mythology could be applied to recent VLSI designs, further leads to low power system design at circuit level.
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	HDL Language VLSI Introduction
Teaching Strategies 教學方法	Lectures and Labs
Course Material 課程教材	● Power Point Slides ● Power measurement labs
Grading 評量方式	Mid-term Presentation 30% Implementation　30% Presentation 20% Term　20%
References 參考書目	● W. Wolf, "FPGA-based System Design", Prentice Hall, 2004 ● S. Palnitkar, "Verilog HDL: A Guide to Digital Design and ● Synthesis", Prentice Hall, 2003, Second Edition ● Keating M. "Low Pwoer Methodology Manual For System-on-Chip Design", Springer, 2008 ● Neil Weste, "CMOS VLSI Design: A Circuits and Systems Perspective (3th Edition)", Addison Wesley, 2005
Contact with Teacher 老師聯絡資訊	+886-5-6315631 ccsun@nfu.edu.tw Prof. Dr.-Ing. Chi-Chia Sun

Course Outline 課程進度	
1. Overview of VLSI 2. Challenges in VDSM and 3D-IC technology 3. Sources of power consumption 4. Power estimation and model 5. Power reduction 6. Energy recovering device 7. Low Power Design Labs 8. Final Presentation	
Remarks 備註	

Courses taught in English

Course title 課程名稱	Optical engineering in crystal(晶體光電工程)
Course Description 課程概述	In this course, the characteristics of an optical device will be appreciated and its limitation can be understood through a study of the electromagnetic propagation. An effort is made to bridge the gap between theory and practical through numerical examples based on real situations. Classical electrodynamics is used in dealing with the coherent interaction of laser radiation with various optical media. The emphasis is on the fundamental principles.
Course objective 課程目標	1. To present a clear physical picture of propagation of laser radiation in various optical media. 2. To teach the students how to analyze and design electro-optical devices.
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	1. Engineering mathematics 2. Electric circuits 3. Electromagnetics
Teaching Strategies 教學方法	Lecture present
Course Material 課程教材	Text book: Optical Waves in Crystals-propagation and control of laser radiation, A. Yativ and P. Yeh
Grading 評量方式	Midterm and final reports
References 參考書目	Wave Optics, N. Lindlein
Contact with Teacher 老師聯絡資訊	e-mail: eocwc@nfu.edu.tw

Course Outline 課程進度	
1. Electromagnetic fields 2. Propagation of laser beams 3. Polarization of light waves 4. Electromagnetic propagation in anisotropic media Midterm report	5. Electro-optics 6. Electro-optics devices 7. Acousto-optic 8. Acousto-optic devices 9. Non-linear optics Final report

Remarks 備註	

Courses taught in English

Course title 課程名稱	Cloud Operation System（雲端作業系統）
Course Description 課程概述	By classroom teaching and cloud implementation, students can learn the basic concepts and the operation methods of cloud
Course objective 課程目標	By learning the cloud operation system, students can learn about the concept of cloud platform. In addition, based on cloud, the detail knowledge related to virtualization can be implemented by students. Furthermore, the data management in cloud is also introduced. Every student can try to implement different types of cloud platform.
Competence 核心能力	1.Computer Science Professional Knowledge 2.Arrange Research Project 3.Thesis Research and Presentation 4.Problem Solving 5.Self-Learning 6.International View 7.Management and Arrangement of Project 8.Integration of Different Domain-Knowledge
Prerequisite Course(s) 先修課程或先備能力	1.Basic Network Concept 2.Computer O.S. Installation Experience
Teaching Strategies 教學方法	1.Provide the online teaching materials 2.Provide the Asynchronous Learning 3.Online teacher teaching, and online teaching assistant 4.Include face to face teaching. 6 times totally 18 hours.
Course Material 課程教材	Self-Made Materials
Grading 評量方式	Homework (10%) Implementation (50%) 證照考試期末考(40%)
References 參考書目	雲端作業系統與實戰 ISBN:978-986-04-5682-0
Contact with Teacher 老師聯絡資訊	Email: jianms@nfu.edu.tw

Course Outline
課程進度

週次 Week	授課內容 Content	授課方式 Teaching Method
1	Distance Learning Configuration	Asynchronous Multimedia Teaching
2	Cloud Operation System Structure 1	Distance Learning (synchronization/ asynchronous) Multimedia Teaching

3	Cloud Operation System Structure 2	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
4	Cloud Operation System Structure 3	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
5	Virtual Machine Introduction	Online Discussion or Face to face Distance Learning (synchronization/ asynchronous) Multimedia Teaching
6	Virtual Machine Implementation	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
7	Virtual Bridge Implementation	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
8	Cloud O.S. Linux-Ubuntu Introduction	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
9	Midterm Exam	Midterm Exam
10	Cloud O.S. Linux-Ubuntu Implementation	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
11	Ubuntu Enterprise Cloud Implementation	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
12	Hadoop/MapReduce Introduction 1	Online Discussion or Face to face Distance Learning (synchronization/ asynchronous) Multimedia Teaching
13	Hadoop/MapReduce Introduction 2	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
14	Hadoop/MapReduce Implementation	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
15	Cloud Service Application Manager Certification Introduction	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
16	Cloud Service Application Manager Certification	Online Discussion or Face to face Distance Learning (synchronization/ asynchronous) Multimedia Teaching
17	HBase Environment Introduction	Distance Learning (synchronization/ asynchronous) Multimedia Teaching
18	Final Exam	Final Exam
Remarks 備註		

Courses taught in English

Course title 課程名稱	Mobile Computing and Applications (行動計算與應用)
Course Description 課程概述	This course will offer concepts, Wireless (communication) networks, and evaluation tools pertinent. Topics to be included are : 1) Introduction, 2) Mobile Adaptive computing , Mobility Management, and Data Dissemination　and Management, 3) Context-aware Computing, 4) Introduction to Mobile Middleware, Middleware for Application Development, and Services Discovery Middleware, 5) Existing Mobile computing Systems, and 6) Project Design, etc.
Course objective 課程目標	1.　Introduction to mobile computing and applications. 2.　Let students known the basic concept of context-aware computing and services. 3.　Let students have the experience of implementing of context-aware services in mobile computing environment.
Competence 核心能力	Have professional competence of Computer science and information engineering. Have abilities of Cross- domain cooperation teamwork. Have abilities of Professional ethics and international vision.
Prerequisite Course(s) 先修課程或先備能力	Computer Programming, Computer Networking
Teaching Strategies 教學方法	Class teaching, papers or technical reports studying, and project practicing
Course Material 課程教材	Kamal Raj, "Mobile Computing", Oxford University Press, 2008.
Grading 評量方式	1.　Attends class and discussion 10% 2.　Mid Exam 20% 3.　Final Exam 20% 4.　Papers or technical reports studying 20% (Group Homework) 5.　project practicing 30% (Group Homework)
References 參考書目	1.　Kamal Raj, "Mobile Computing", Oxford University Press, 2008. 2.　Frank Adelstein ,Sandeep, K . SGupta, Golden RichardII I,Loren Schwiebert, "Fundamentals of Mobileand Pervasive Computing", McGraw-Hill,2004. 3.　Al-Karaki, J. N. and A. E. Kamal, "A Taxonomy of Routing Techniques in Wireless Sensor Networks", in Sensor Networks Handbook, I. Mahgoub and M. Ilyas (eds.), CRC Publishers, 2004.
Contact with Teacher 老師聯絡資訊	E-mail：jhjiang@nfu.edu.tw
Course Outline 課程進度	

單元主題	主題大綱
Mobile Adaptive Computing	What is Mobile Computing?
	Adaptability－The Key to Mobile Computing
	Mechanisms for Adaptation
	How to Develop or Incorporate Adaptations in Applications
	Support for Building Adaptive Mobile Applications
	Mobility Management
	Data Dissemination　and Management
	Context-aware Computing
	Introduction to Mobile Middleware
	Middleware for Application Development
	Services Discovery Middleware
	Services Discovery Middleware
	Challenges
	Project Design
Mobility Management	Mobility Management
	Location Management Principle & Techniques
	Location Management Cases Studies
Data Dissemination　and Management	Challenges
	Data Dissemination
	Mobile Data Caching
	Mobile Cache Maintenance Schemes
	Mobile Web Caching
Context-aware Computing	How content-aware applications can be developed
	What is Context?
	Context-aware Computing and Application
	Middleware Support
Introduction to Mobile Middleware	What is Mobile Middleware?
	Adaptation
	Agents
	Services Discovery
Middleware for Application Development	Adaptation
	Mobile Agents
Services Discovery Middleware	Finding Needed Services
	Services and Advertisement Protocols
Challenges	Constrained Resourses
	Security
	Mobility
	Future Topics
Project Design	Project Design
Remarks 備註	

Courses taught in English

Course title 課程名稱	資訊管理(Information Management)
Course Description 課程概述	a. IT/IS and strategic advantage- strategy formulation for IT/IS; conceptual models for identifying strategic IT/IS opportunities and applications, e.g. stage hypotheses, applications portfolio, strategic grid, critical success factors. b. Analysis and review of some major decisions to be taken with regard to deployment of IS/IT resources- e.g. rightsizing, end-user computing, outsourcing, business process re-engineering. c. Management of IT/IS investment- issues related to information value and IT/IS value; management if IT/IS costs and benefits; review of traditional and recent investment appraisal techniques; risk in IT/IS projects. d.Structure and control of IT/IS activities- location in the organization; organization of the IS/IT department; steering committees; IT/IS director; spending patterns; appraisal of IS/IT projects; responsibility accounting for IT/IS projects.
Course objective 課程目標	a.To enable perception of why, where and how information technology/systems should be linked with formulation of business strategy. b.To examine from the strategic perspective the organization, control, monitoring and evaluation of information technology/systems activities. c.To understand the main issues concerned with the economics aspects of information technology/systems.
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	
Teaching Strategies 教學方法	Oral presentation, case discussion
Course Material 課程教材	Business Driven Information Systems, the fifth edition
Grading 評量方式	Presentation 40% Participation and Discussion 20% mid-exam/report 20% final-exam/report 20%
References 參考書目	
Contact with Teacher 老師聯絡資訊	lgcwow@gmail.com

Course Outline 課程進度	
Foundation Concepts	Foundations of Information systems in business competing with information technology
	information technology
information technology	computer hardware computer software data resource management telecommunications and networks
business applications	e-business system enterprise business system electronic commerce systems decision support systems
development process	developing business/IT strategies developing business/IT solutions
Manaement Challenges	security and ethical challenges enterprise and global management of information technology

Remarks 備註	

Courses taught in English

Course title 課程名稱	Behavioral Financial（行為財務）
Course Description 課程概述	We will apply the phycology to analyze the behavior of investment, including a lot of biases we will have in investment. Such as overconfidence, mental budgeting, gender difference and home bias. We will also discuss the impact of technology, like the internet, affect our investment behavior. This course can help us to understand ourselves when we make investment decision, as help us to avoid make some emotional mistakes.
Course objective 課程目標	This course targets the link between the peculiarities of human behavior and aspects of financial and investment management, as well as corporate and risk management. Students should understand and develop skills for taking into account behavioral factors in various aspects of financial markets and operation of corporations.
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	lectured in English
Teaching Strategies 教學方法	Oral
Course Material 課程教材	Investment Madness
Grading 評量方式	Examination 40% Paper presentation 30% Discussion 30%
References 參考書目	
Contact with Teacher 老師聯絡資訊	chilin@nfu.edu.tw

Course Outline 課程進度	

How the psychology affect our investment	1.Not Thinking Clearly
	2.Overconfidence
	3.Emotional Rule
	4.Function of the Brain

What can we do about it ?	5.Mental　Accounting	
	6.Investing　and　Internet	
	7.What　can　I　do　about　it	
Remarks 備註		

Courses taught in English

Course title 課程名稱	Global Marketing（ 全球化行銷）
Course Description 課程概述	Introduction to Global Marketing Global Economic Environment Political and Legal Environment Cultural Environment Global Customerst Global Marketing Research Global Segmentation and Position Global Marketing Strategy Global Market Entry Modes Global Product Development,Marketing Products and Services Global Pricing Communication with the World Consumer Sales Management Global Logistics and Distribution and Global Marketing Channels Export and Import Management
Course objective 課程目標	1. To understand and implement a variety of International Marketing research designs and measurement techniques. 2. To practice critical evaluation of International Marketing research articles. 3. To facilitate the independent conduction and report of International Marketing research and case study. 4. To understand trade distortions and marketing barriers, culture, consumer behavior, International Marketing Research, foreign market entry strategies, product and branding strategies, promotion and pricing strategies, and currencies and foreign exchange
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	
Teaching Strategies 教學方法	Lecture; Case Discuss; Field Trip;
Course Material 課程教材	Global Mareketing Management
Grading 評量方式	Case Study 30%; Class Participation 30%; Final Project 40%

References 參考書目	
Contact with Teacher 老師聯絡資訊	evehsu@ms22.hinet.net

Course Outline
課程進度

Global Environment	Introduction to Global Marketing Global Economic Environment Political and Legal Environment Cultural Environment Global Customerst Global Marketing Research
Global Marketing Management	Global Segmentation and Position Global Marketing Strategy Global Market Entry Modes Global Product Development,Marketing Products and Services Global Pricing Communication with the World Consumer Sales Management Global Logistics and Distribution and Global Marketing Channels Export and Import Management

Remarks 備註	

Courses taught in English

Course title 課程名稱	Production Management and Practices(生產管理與實務)
Course Description 課程概述	This course is intended as an introduction to the field of operations management with the emphasis in production management and practice that covers forecasting, process selection and facility layout, scheduling.
Course objective 課程目標	1. Understand the theoretic basis and basic concept of production management. 2. Understand the mathematical applications to the simplified cases in the practical world.
Competence 核心能力	The skill of handling the production management related works in the real world.
Prerequisite Course(s) 先修課程或先備能力	No
Teaching Strategies 教學方法	1. Text book lecturing and discussing. 2. Scheduling cases presentation and discussion
Course Material 課程教材	Operations Management, 12 ed, by William J. Stevenson
Grading 評量方式	Midterm Exam. 40%, Case Report　45%, Attendance 15%
References 參考書目	No
Contact with Teacher 老師聯絡資訊	pchu@nfu.edu.tw

Course Outline 課程進度	
Chap. 1. Introduction to Operations Management	Scheduling case study and illustration
Chap. 2. Competitiveness, Strategy, and Productivity	Scheduling case study and discussion
Chap. 3. Forecasting	Scheduling case study and report (Cases 1 and 2)
Chap. 6. Process Selection and Facility Layout	Scheduling case study and report (Case 3)
	Scheduling case study and report (Case 4)
Midterm Exam.	Scheduling case study and report (Case 5)
	Scheduling case study and report (Case 6)

Remarks 備註	

Courses taught in English

Course title 課程名稱	Applied Statistics（應用統計學）
Course Description 課程概述	1. Introduction of statistical theory. 2. Computer software coding.
Course objective 課程目標	Application of statistical models for solving management problems.
Competence 核心能力	Statistical models and computer coding.
Prerequisite Course(s) 先修課程或先備能力	None.
Teaching Strategies 教學方法	Lecture and computer software application.
Course Material 課程教材	Probability and Statistics with Integrated Software Routines by Deep, Ronald. ISBN: 9780080480381
Grading 評量方式	Homework assignment 30%, Mid-term exam. 30%, Final exam. 40%
References 參考書目	Mathematical statistics with applications by Wackerly, Mendenall and Scheaffer.
Contact with Teacher 老師聯絡資訊	Email:jphuagn@nfu.edu.tw Tel:05-6315714

Course Outline 課程進度	

1. Coding on Excel.
2. Statistical estimation.
3. Statistical tests.
   Mid-term exam.
4. Analysis of Variance.
5. Chi-squares tests.
6. Regression models.
7. Data clustering.
   Final exam.	

Remarks 備註	

Courses taught in English

Course title 課程名稱	Simulation（模擬學）
Course Description 課程概述	This course is intended to give an up-to-date treatment of all the important aspects of simulation modeling study and applications, including discrete event simulation methodology, introduction of simulation languages, and statistical aspects of simulation. About 40% of class time will be devoted to simulation software learning.
Course objective 課程目標	1. To be able to do simulation 2. To understand the development of simulation and simulation-related research.
Competence 核心能力	Simulation Programming Ability Problem Formulation Ability
Prerequisite Course(s) 先修課程或先備能力	Statistics Any programming Language
Teaching Strategies 教學方法	Lecture Software Practice Literature Review
Course Material 課程教材	Getting start with Automod Computer Simulation in Management Science
Grading 評量方式	Homework　　　　60% Final Project 30% Participation 10%
References 參考書目	
Contact with Teacher 老師聯絡資訊	chh@nfu.edu.tw

Course Outline 課程進度	
Introduction Simulation Package-AutoMod	Computer Simulation in Management Science Simulation Literature Review
Remarks 備註	

Courses taught in English

Course title 課程名稱	Networks and Logistics（網路與運籌）
Course Description 課程概述	Study mathematical programming models, methods and applications for networks and logistics
Course objective 課程目標	To apply mathematical programming models and methods for solving practical networks and logistics problems
Competence 核心能力	1. Mathematic methods and statistical techniques 2. Decision-making and planning techniques 3. Innovative thinking and the ability to solve problems independently 4. Applying industrial engineering and management knowledge to analyze and solve practical problems 5. International language communication skills
Prerequisite Course(s) 先修課程或先備能力	none
Teaching Strategies 教學方法	Lecture, computer practice, paper discussion
Course Material 課程教材	Class notes
Grading 評量方式	Midterm 30%, Homework and paper discussion 30%, Final 40%
References 參考書目	none
Contact with Teacher 老師聯絡資訊	yhsieh@nfu.edu.tw http://sparc.nfu.edu.tw/~yhsieh/3w.htm

Course Outline 課程進度	
（Part 1: To midterm exam） **1. Introduction of Graphs & Networks** A preview of some of the graph & network problems to be studied in this course **2. Network Models** Transportation problem Linear assignment problem	（Part 2: from midterm exam to final exam） **1. Location Problems** Location without calculus Webers Problem (location in the plane) Location of multiple facilities in the plane Median problem in a network Center problem in a network Simple (uncapacitated) plant location

Airline crew assignment Generalized assignment problem Quadratic assignment problem **3.** **Set Covering Problem** Mathematical model Applications	**2.** **Assembly Line Balancing** Math programming model & methods: Kilbridge & Wester Ranked positional weight method Reversed ranked positional weight method COMSOAL Genetic algorithm
Remarks 備註	

Courses taught in English

Course title 課程名稱	Seminar on Information Management(二) (資訊管理專題研討(二))
Course Description 課程概述	・ Paper study and presentation. ・ Computer System implementation based on the results of students' paper study. ・ System demo
Course objective 課程目標	Students understand how to do researches for Information Management
Competence 核心能力	● Logic thinking and analysis ● Professional problem solving ability ● Application and integration of using information system ● Internationalization and foreign language ability ● Management decision ability
Prerequisite Course(s) 先修課程或先備能力	English paper reading and studying
Teaching Strategies 教學方法	Paper presentation, Quiz, Assignment, System Demo
Course Material 課程教材	Journal papers (include by SCI and SSCI) in English
Grading 評量方式	Paper presentation: 70% Participation: 30% Others (system demo): 20%
References 參考書目	None
Contact with Teacher 老師聯絡資訊	thh@nfu.edu.tw 05-6315739 Prof. Tsai's office (9F)

Course Outline 課程進度	
Paper #1 study and presentation	Paper study and presentation
A plan for computer system (software) construction (implementation)	A plan for computer system construction (implementation) based on the results of students' paper study.
Paper #2 study and presentation	The second paper study and presentation
Computer System Demo	

Remarks 備註	

Courses taught in English

Course title 課程名稱	Database Management(資料庫管理)
Course Description 課程概述	This course aims at giving students an understanding of advanced database concepts, terminologies and technologies.
Course objective 課程目標	The student will learn the theoretical and practical knowledge about data processing from both the technical and organization perspectives.
Competence 核心能力	Database management, data processing, big data analysis.
Prerequisite Course(s) 先修課程或先備能力	NA
Teaching Strategies 教學方法	Lectures, discussions
Course Material 課程教材	Ref: Jeffrey D. Ullman, Jennifer Widom, A First Course in Database Systems.
Grading 評量方式	Exams, projects.
References 參考書目	NA
Contact with Teacher 老師聯絡資訊	ythou@nfu.edu.tw

Course Outline 課程進度	
Week 1 Database System Introduction Week 2 Overview of a Database Management System Week 3 Relational Model of Data Week 4 Algebraic Query Language Week 5 Design Theory of Relational Database Week 6 Database Schema Week 7 High-Level Database Model Week 8 E/R Model Week 9 Midterm Week 10 Advanced Data processing Week 11 Big Data I Week 12 Big Data II Week 13 Big Data III	

Week 14 Big Data analysis Week 15 Map and Reduce Week 16 RDD Week 17 Spark system Week 18 Final Exam	
Remarks 備註	

Courses taught in English

Course title 課程名稱	Theory and Practice of Investment (投資學理論與實務)
Course Description 課程概述	This course is a graduate-level investment course that focuses on practical applications as well as analytical analyses of investment theories.　The major topics include portfolio theory, factor pricing models and investment evaluation.
Course objective 課程目標	Students will understand how to build a well-diversified investment portfolio, how to select securities among each asset classes, and how to evaluate the portfolio performance.
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	A basic understanding on statistics will be helpful but is not required
Teaching Strategies 教學方法	
Course Material 課程教材	Zvi Bodie, Alex Kane, and Alan J. Marcus (2013), Essentials of Investments, ninth Edition, McGraw-Hill.
Grading 評量方式	Mid-term Exam. 35% Final Exam. 35% Homework and Presentation 15% Regular attendance 15%
References 參考書目	
Contact with Teacher 老師聯絡資訊	Email: yawenlai@nfu.edu.tw

Course Outline 課程進度	
Course Introduction Portfolio Theory: Risk and Return Portfolio Theory: Diversification Portfolio Theory: CAPM　and APT Portfolio Theory: EMH Portfolio Theory: Behavior Finance Equity Valuation Portfolio performance evaluation	
Remarks 備註	