107/2 Courses taught in English(107 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博士班)	2391	Machine system dynamics （機器系統動力學）	Elective 選修	3	Yunn-Lin, Hwang 黃運琳	Course Outline
2.	Institute of Mechanical and Electro-Mechanical Engineering(動力機械工程系機械與機電工程博士班)	2389	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博士班)	2390	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博士班)	2392	Advanced in Nano/Micro Tribology （高等微奈米磨潤）	Elective 選修	3	Jeng-Haur, Horng 洪政豪	Course Outline
5.	Institute of Mechanical and Electro-Mechanical Engineering(動力機械工程系機械與機電工程博士班)	2387	Higher engineering analysis （高等工程分析）	Elective 選修	3	Shou-Yin, Yang 楊授印	Course Outline
6.	Institute of Mechanical and Electro-Mechanical Engineering(動力機械工程	2388	Practical Mechanism Innovation Design （機構創新設計實務）	Elective 選修	3	Long-Chang, Hsieh 謝龍昌	Course Outline

	系機械與機電工程博士班)						
7.	Institute of Mechanical Design Engineering(機械設計工程系碩士班)	0249	System Integration Design （系統整合設計）	Elective 選修	3	Rong-Yuan, Jou 周榮源	Course Outline
8.	Institute of Mechanical Design Engineering(機械設計工程系碩士班)	0251	Mechanical Vibrations （機械振動學）	Elective 選修	3	Yunn-Lin, Hwang 黃運琳	Course Outline
9.	Institute of Automation Engineering(自動化工程系碩士班)	0052	Creation and Invention （創意與發明）	Elective 選修	3	Roug-Feng, Tsai 蔡榮鋒	Course Outline
10.	Institute of Automation Engineering(自動化工程系碩士班)	0055	Engineering Analysis （工程分析）	Elective 選修	3	Meng-Tse, Lee 李孟澤	Course Outline
11.	Institute of Automation Engineering(自動化工程系碩士班)	0057	Big Data Analysis （巨量資料分析）	Elective 選修	3	Kuang-Chyi, Lee 李廣齊	Course Outline
12.	Graduate Institute of Materials Science and Green Energy Engineering (材料科學與工程系材料科學與綠色能源工程碩士班)	0223	Reading and Writing of Scientific Paper （科技論文導讀與寫作）	Elective 選修	3	Jau-Shiung, Fang 方昭訓	Course Outline
13.	Institute of Electrical Engineering (電機工程系碩士班)	0143	Advance MPSOC FPGA System Integration （高等 FPGA 系統設計與實務）	Elective 選修	3	Chi-Chia, Sun 宋啟嘉	Course Outline
14.	Institute of Electrical Engineering (電機工程系碩士班)	0137	Heterogeneous Access Technologies of Mobile Broadband Networks （行動寬頻網路異質存取技術）	Elective 選修	3	HUI-KAI, SU 蘇暉凱	Course Outline
15.	Institute of Electrical	0141	Electronic Circuit Design Practice （電子電路設計實務）	Elective	3	Sen-Tung, Wu	Course Outline

				選修		吳森統	
	Engineering (電機工程系碩士班)						
16.	Master of Electro-Optical and Materials Science(光電工程系光電與材料科技碩士班)	0304	Analog Integrated Circuit （類比積體電路）	Elective 選修	3	Wen-Kai, Kuo 郭文凱	Course Outline
17.	Master of Electro-Optical and Materials Science(光電工程系光電與材料科技碩士班)	0299	Optical engineering in crystal （晶體光電工程）	Elective 選修	3	Wei-Qun, Chuang 莊為群	Course Outline
18.	Institute of Information Management(資訊管理系碩士班)	0098	Database Management （資料庫管理）	Elective 選修	3	Yung-Tsung, Hou 侯雍聰	Course Outline
19.	Institute of Information Management(資訊管理系碩士班)	0102	Machine Learning and Big data （機器學習與大數據）	Elective 選修	3	Nian-Ze, Hu 胡念祖	Course Outline
20.	Institute of Department of Finance(財務金融系碩士班)	0038	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
21.	Institute of Industrial Engineering and Management (工業管理系工業工程與管理碩士班)	0321	Networks and Logistics （網路與運籌）	Elective 選修	3	Yi-Chih, Hsieh 謝益智	Course Outline
22.	Institute of Industrial Engineering and Management (工業管理系工業工程與管	0322	Simulation （模擬學）	Elective 選修	3	Chih-Hsiung, Hu 胡智熊	Course Outline

	理碩士班)						
23.	Institute of Industrial Engineering and Management (工業管理系工業工程與管理碩士班)	0323	Service Quality Management （服務品質管理）	Elective 選修	3	Po-Chieng, Hu 胡伯潛	Course Outline
24.	Institute of Industrial Engineering and Management (工業管理系工業工程與管理碩士班)	0324	Applied Statistics （應用統計學）	Elective 選修	3	Jyun-Ping, Huang 黃俊平	Course Outline
25.	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0354	Technology Management （科技管理）	Elective 選修	3	Yu-Chun, Chen 陳鈺淳	Course Outline
26.	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0352	Behavioral Finance （行為財務）	Elective 選修	3	Chi-Lin, Lu 呂麒麟	Course Outline
27.	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0353	Strategic Management （策略管理）	Elective 選修	3	Yi Hsu 徐怡	Course Outline
28.	Master program of Business Management of Department	0351	Information Management （資訊管理）	Elective 選修	3	Chih-Chin, Liang	Course Outline

	of Business administration (企業管理系經營管理碩士班)					梁直青	
29.	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0350	Organizational Behavior （組織行為）	Elective 選修	3	Ching-Hsiang, Liu 劉慶湘	Course Outline
30.	Graduate School of Digital Contents and Creative Industries（多媒體設計系數位內容創意產業碩士班）	0175	Project Discussions (II) （專題討論(二)）	Required 必修	3	Siu-Tsen, Shen 沈思岑	Course Outline
31.	Graduate School of Digital Contents and Creative Industries（多媒體設計系數位內容創意產業碩士班）	0178	Multimedia Creativity and Performance Research （多媒體創作與表現專題研究）	Elective 選修	3	Siu-Tsen, Shen 沈思岑	Course Outline
32.	Graduate School of Digital Contents and Creative Industries（多媒體設計系數位內容創意產業碩士班）	0184	Social Interactive Media Research （社交媒體互動研究）	Elective 選修	3	Siu-Tsen, Shen 沈思岑	Course Outline
33	Graduate Institute of Aeronautical and Electronic Engineering （飛機工程系航空與電子科技碩士班）	0315	International Aviation Regulation （國際民航法規）	Elective 選修	3	Chung-Yan, Lin 林中彥	Course Outline
34	Graduate Institute of Aeronautical and Electronic Engineering （飛機工程系航空與電子科技碩士班）	0310	Flight Safety （飛航安全）	Elective 選修	3	Arnold, Wang 王士嘉	Course Outline

Course title 課程名稱	Dynamics of Machine System (機器系統動力學)
Course Description 課程概述	Dynamic loads and undesired oscillations increase with higher speed of machines. At the same time, industrial safety standards require better vibration reduction. This course covers model generation, parameter identification, balancing of mechanisms, torsional and bending vibrations, vibration isolation, and the dynamic behavior of drives and machine frames as complex systems.
Course objective 課程目標	Let students understand "Dynamics of Machine System" in the applications of industry.
Competence 核心能力	Mature, Stable and Computational abilities.
Prerequisite Course(s) 先修課程或先備能力	Dynamics and Mechanics of Materials.
Teaching Strategies 教學方法	Course Notes, Computer Simulation, and Report Writing.
Course Material 課程教材	Lecture notes.
Grading 評量方式	Quiz, Mid-term Examination, Final Examination, and Final Project.
References 參考書目	1. Mabie/Ocvirk, 1990, Mechanisms and Dynamics of Machinery, 3rd Ed. New York, NY: John Wiley & Sons. 2. Nikravesh, Parviz E., 1988, Computer-Aided Analysis of Mechanical Systems, Prentice-Hall, Inc. 3. Shabana, Ahmed A., 2001, Computational Dynamics, John Wiley & Sons, Inc.
Contact with Teacher 老師聯絡資訊	Yunn-Lin Hwang/黃運琳 hwang@nfu.edu.tw TEL: 05-6315339

Course Outline 課程進度	
Outline: 1.　　Introduction 2.　　Linear algebra 3.　　Kinematics 4.　　Forms of the dynamic equations 5.　　Virtual work and Lagrangian dynamics	

6.	Constrained dynamics	
7.	Spatial dynamics	
8.	Other topics in spatial dynamics	
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 studied in the class.
Course objective 課程目標	1. Coordinate Transformation 2. Tooth Profile Generation 3. Tooth Contact Analysis
Competence 核心能力	Learn to derive the tooth profile of gears based on the machine and cutter geometry.
Prerequisite Course(s) 先修課程或先備能力	Mechanisms
Teaching Strategies 教學方法	Class Learning and Project Based Learning
Course Material 課程教材	Theory of Gearing, F. L. Litvin
Grading 評量方式	1. Mid-examination 2. Paper Reading and Presentation 3. Project
References 參考書目	Gear Geometry and Applied Theory, F. L. Litvin and Alfonso Fuentes
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	5. Plane Gearing Analysis 6. Basic Kinematic Relations of Plane Gearings and Their Application 7. Generation of Conjugate Shapes 8. 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	

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	

2.2 Hard film CHAPTER 3 CONTACT ANALYSIS 3.1 Surface roughness 3.2 Microcontact model 3.3 Adhesion model 3.4 Application of microcontact CHAPTER 4 MICRO/NANOTRIBOLOGY 4.1 Micro-friction 4.2 Micro-wear 4.3 Static dynamic, and shear properties of molecularly thin liquid film 4.4 Smooth sliding and stick-slip	
Remarks 備註	

Courses taught in English

Course title 課程名稱	Advanced Engineering Analysis (高等工程分析)
Course Description 課程概述	The teaching objectives of this course can be summarized into two: the first goal is to learn how to model an engineering system, that is, how to build an analytical model; the second goal is to understand the numerical solution obtained after Fluent/Comsol analysis.
Course objective 課程目標	Train graduate students to evaluate engineering problems encountered in numerical analysis and solve engineering problems numerically
Competence 核心能力	Train students to quickly and accurately solve engineering problems encountered in the future workplace
Prerequisite Course(s) 先修課程或先備能力	Mathmatics
Teaching Strategies 教學方法	Oral and group project
Course Material 課程教材	Oral and power point
Grading 評量方式	Mid-exam, final exam and homework
References 參考書目	Fleunt and Comsol Text Book
Contact with Teacher 老師聯絡資訊	PME, 5F. Engineering Building 2

Course Outline 課程進度	
Introduction	Analysis of Two-dimensional solid Mechanics Problems
Matrix Algebra	Dynamic Problems
Trusses	Analysis of Fluid Mechanics Problems
Axial Members, Beams and Frames	Three-Dimensional Elements
One-dimensional Elements	Design and Material Selection
Analysis of One-dimensional Problems	Design Optimization
Two-dimensional Elements	
More Fluent	

Remarks 備註	

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

Chapter 7　Systematic Designs of Planetary Grinding Devioces
  7.1　Introduction
  7.2　Grinding Devices
  7.3　New Design Concept
  7.4　Kinematic Equations
  7.5　Area Ratio
  7.6　Design Examples

Remarks
備註

Courses taught in English

Course title 課程名稱	System Integration Design (系統整合設計)
Course Description 課程概述	This course teaches the student how to design, instrument, and control high precision, computer-controlled automation equipment, using concrete examples drawn from the photonics, biotech, and semiconductor industries. Topics covered include production & operation management, simulation, manufacturing processes, smart manufacturing, production system integration and testing, green economics & Sustainability, engineering ethics. Students will work in teams, both in classroom and out-of-classroom, to integrate and apply the material covered in class to a term-long multi-part design project in 3D CAD, Flexsim software, IoT devices integrated with WebAccess platform, and completed several design projects in a group and present the results at the end of the class.
Course objective 課程目標	1. Equip engineering students with the knowledge and experience to design instrumented, computer controlled machinery. 2. Teach students how to financially justify and successfully execute a machine development project. 3. Give students interdisciplinary hands-on experience in the design of electromechanical systems.
Competence 核心能力	PLC/HMI, IoT Sensing Technology, Python
Prerequisite Course(s) 先修課程或先備能力	As an outcome of completing this course, students will: 1.Have the tools necessary to design and instrument computer-controlled machinery. 2.Have the knowledge to financially justify, plan and execute a machine development project.
Teaching Strategies 教學方法	Project(or Problem) Based Learning(PBL) to study and to practice the implementation skills of system integration design.
Course Material 課程教材	Self-developed course materials
Grading 評量方式	Oral Presentation：20% Midterm Exam: 30% (Test and Design Project) Final Exam: 40% (Design Project and Final Reports) Attendance rate: 10%
References 參考書目	1.Industrial 4.0 Theory and Practice 2.Flexsim Simulation, Practical Techniques 3.Mikell P. Groover，Automatic Production System 4.Krajewski et al.，Production and Operation Management 5.NTHU OpenCourseWare
Contact with Teacher	Office: Eng. Building #1, 7F 05-6315364

老師聯絡資訊	
Course Outline 課程進度	
1. Industrial Analysis: Production and Operation Management 2. Manufacturing Processes: Automatic Production System 3. Production Manufacturing Planning: System Simulation by Flexsim Software and Production Line Design 4. Smart Manufacturing: Industrial 4.0 and Smart Factory (CPS, IoT, Big Data, and AI) 5. Production System Integration and Testing: Implementations of WebAccess IoT Platform 6. Green Economics and Sustainability: Energy Management and Recycling 7. Engineering ethics: System Safety Design 8. Final Project and Presentation	一、產業分析：生產與作業管理 二、製造流程：自動化生產系統 三、生產製造流程規劃：Flexsim 系統模擬與產線設計 四、智慧製造：工業 4.0 與智慧工廠(CPS、物聯網、大數據及 AI) 五、生產系統整合與測試： WebAccess 物聯網平台應用 六、綠色經濟與永續發展： 能源管理、回收再利用 七、工程倫理：系統安全設計 八、期末展示與期末報告
Remarks 備註	

Course title 課程名稱	Mechanical Vibrations (機械振動學)	
Course Description 課程概述	Mechanical Vibrations is the study of the vibration behavior of flexible bodies, each of which may undergo external exciting forces.	
Course objective 課程目標	Let students understand "Mechanical Vibrations" in applications of industry.	
Competence 核心能力	Mature, Stable and Computational abilities.	
Prerequisite Course(s) 先修課程或先備能力	Statics, Dynamics and Mechanics of Materials.	
Teaching Strategies 教學方法	Course Notes, Computer Simulation, and Report Writing.	
Course Material 課程教材	Shabana A. A., 1991, *Theory of Vibration - Volume I: An Introduction*, Springer-Verlag, New York.	
Grading 評量方式	Quiz, Mid-term Examination, Final Examination, and Final Project.	
References 參考書目	1. Meirovitch L., 1987, Element of Vibration Analysis, 2nd edition, McGraw-Hill Book Company, New York. 2. Inman D. J., 1994, Engineering Vibration, Prentice-Hall International, New York.	
Contact with Teacher 老師聯絡資訊	Yunn-Lin Hwang/黃運琳 hwang@nfu.edu.tw TEL: 05-6315339	
Course Outline 課程進度		

Outline:

1. Introduction
2. Solutions of the Vibration Equations
3. Free Vibration of Single Degree of Freedom Systems
4. Forced Vibration of Single Degree of Freedom Systems
5. Response to Nonharmonic Forces
6. Multi-Degree of Freedom Systems
7. Introduction of vibration measurements

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	1.Group project 2.Presentation 3.Discussion 4.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 3 : Case studies ii: airplane, submarine	Chapter 12 : Iot and its application III
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 15 Final report and discussion III

Chapter 5 : Case studies iv: Air conditioner and refrigerator Chapter 6 : Discussion I Chapter 7 : TRIZ I: daily living tool Chapter 8: TRIZ II: stationary Chapter 9 : Discussion II	Chapter 16Final report and discussion IV Chapter 17 Summary and Feedback I Chapter 18 Summary and Feedback II
Remarks 備註	

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-4: 2nd Order Homogeneous ODE Models – Free Oscillations	Part-7: Linear System of ODE
	Part-8: Linear System of ODE Models – Multi-Systems Interaction

Remarks 備註	

Courses taught in English

Course title 課程名稱	Big Data Analysis (巨量資料分析)
Course Description 課程概述	The course completely self-contained and heavily illustrated this introduction to basic concepts and methodologies for data mining and big data analytics truly is suitable for seniors and first-year graduate students in almost any technical discipline. The course explores the concepts and techniques of data mining, a promising and flourishing frontier in data and information systems and their applications. Data mining, also popularly referred to as knowledge discovery from data (KDD), is the automated or convenient extraction of patterns representing knowledge implicitly stored or captured in large databases, data warehouses, the Web, other massive information repositories, or data streams.
Course objective 課程目標	Introducing the concepts of data mining and big data analysis.
Competence 核心能力	Progamming about the data mining and big data analysis.
Prerequisite Course(s) 先修課程或先備能力	Computer Programming Languages (計算機程式)
Teaching Strategies 教學方法	Oral Teaching, Practice in computer and Testing
Course Material 課程教材	Jiawei Han & Micheline Kamber, Data Mining: Concepts and Techniques, 2nd edition, Elsevier: Morgan Kaufmann Publishers.
Grading 評量方式	◆attendance rate：10 %　　◆The usual assessment：30 % ◆Midterm assessment：25 % ◆Final assessment：25 %　　◆The others：10%
References 參考書目	Hand-Out and Web-site Materials
Contact with Teacher 老師聯絡資訊	Kuang-Chyi Lee, kclee@nfu.edu.tw, 05-6315379
Course Outline 課程進度	
Introduction to Data Mining and Knowledge Discovery from Data Data Preprocessing Binary image Data Warehouse and Technology Data Cube Computation and Data Generalization Mining Frequent Patterns, Associations and Correlations	Classification Prediction Accuracy and Error Measures Cluster Analysis Mining Stream Time-Series Sequence Data
Remarks 備註	

Courses taught in English

Course title 課程名稱	Reading and Writing of Scientific Paper （科技論文導讀與寫作）
Course Description 課程概述	The course is designed for a university students at the upper division or graduate level who are preparing to engage in scientific research in a variety of academic disciplines. The principal type of writing treated in this course is the experimental research report, but the information in this course is also relevant to writing research proposals, literature reviews, summaries, abstracts, and especially theses and dissertations.
Course objective 課程目標	For these students, the ability to write up the results of their own research in the form of technical reports, theses, dissertations, and even journal articles for publication is the key to their success as university students in their own disciplines.
Competence 核心能力	Through this course of reading, writing, and research practice, the students will soon master the language of the experimental research report and research journal papers.
Prerequisite Course(s) 先修課程或先備能力	Basic English reading and listening.
Teaching Strategies 教學方法	Lecturing in the courses.
Course Material 課程教材	Handouts
Grading 評量方式	Home works 30% Reporting 40% Attendance 30%
References 參考書目	Writing up research
Contact with Teacher 老師聯絡資訊	jsfang@nfu.edu.tw

Course Outline
課程進度

1. Punctuation
2. Resume writing
3. Email writing
4. The experimental research report
5. The introduction—Establishing a context
6. The introduction—Reviewing previous research
7. The introduction—Advancing to present research
8. Results

9. Discussion
10. Conclusions
11. Abstract
12. Cover letter
13. Highlights
14. Thesis format
15. Publish notes

Remarks 備註	

Courses taught in English

Course title 課程名稱	Advance SOC FPGA System Integration with Machine Learning （高等 FPGA 系統設計與實務）
Course Description 課程概述	This course is designed for graduate students who are interested in advanced SoC FPGA design concepts, design methodology, and basic concept of Machine Learning. In the meantime, several Labs about the Xilinx PYNQ tutorials related to AI and Machine Learning will be demonstrated. After that, several lectures with the related topics to OpenCL FPGA tutorials will be given. Of course, we will select some state-the-art researches for computational efficient algorithm in FPGA/ARM implementation and these topics will be assigned as a small colloquium for students. At the end, graduate students shall present their final projects and its implementation on ZYNQ or PYNQ FPGA.
Course objective 課程目標	The objective of Advance SOC FPGA System Integration with Machine Learning is a guidance how 21's century SOC FPGA mythology could be applied to recent SoC FPGA platform, further leads to embedded system design at system level.
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	HDL Language (VHDL or Verilog) CPLD/FPGA Implantation
Teaching Strategies 教學方法	Lectures and Labs
Course Material 課程教材	● Power Point Slides ● FPGA labs ● PYNQ Labs ● Machine Learning Labs
Grading 評量方式	Home work assigments 20% Mid-term Presentation 20% Implementation　30% Presentation 10% Term　20%
References 參考書目	● Kastner R., Matai J. and Neuendorffer S. "Parallel Programming for FPGAs", Kastner Research Group 2018 ● The Zynq Book, http://www.zynqbook.com/　2018. ● S. Palnitkar, "Verilog HDL: A Guide to Digital Design and ● Synthesis", Prentice Hall, 2003, Second Edition
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. Introduction of SoC FPGA 2. Introduction of Machine Learning 3. Xilinx PYNQ Labs 4. Colloquium and Mid-Report 5. OpenCL@SDSOC 6. Colloquium 7. Final-Project and Presentation	

Remarks 備註	

Courses taught in English

Course title 課程名稱	Heterogeneous Access Technologies of Mobile Broadband Networks (行動寬頻網路異質存取技術)
Course Description 課程概述	The course is a course project supporting by MOE (ministry of education), Taiwan. It will introduce the fundamental of heterogeneous mobile networks. Moreover, LWA (LTE-WLAN aggregation) small Cell, QoS of multimedia streaming, load scheduling for heterogeneous networks are included. Moreover, the lab experiences will train the students' practical skills. LWA-small cell installation, interference measurement, QoS performance measurement and load scheduling for multimedia streaming are included in the lab experiences. Finally, the students will propose a project of heterogeneous mobile networks with team work.
Course objective 課程目標	1. Training the basic concepts of mobile broadband networks and heterogeneous access technologies. 2. Training the basic skills of installation, measurement and load scheduling for LWA-small cells.
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	Introduction to computers Programming Language
Teaching Strategies 教學方法	● Lecture ● Lab Experience with Project-Based Learning
Course Material 課程教材	The project and own teaching materials
Grading 評量方式	● Participation: 10% ● Experiment: 40% ● Midterm: 20% ● Final Project: 30%
References 參考書目	
Contact with Teacher 老師聯絡資訊	hksu@nfu.edu.tw 05-6315619

Course Outline 課程進度	
1. Introduction to heterogeneous mobile networks 2. HetNet heterogeneous mobile networks 3. ICIC interference coordination and multi-point coordination of CoMP 4. ITRI LWA-Small Cell's heterogeneous network experiment platform 5. QoS of multimedia video streaming over heterogeneous networks 6. Offloading on the LWA-Small Cell experimental platform (Off-loading) 7. Load Scheduling on the LWA-Small Cell	

experimental platform 8. Final Project	
Remarks 備註	

Courses taught in English

Course title 課程名稱	Electronic Circuit　Design Practice (電子電路設計實務)
Course Description 課程概述	The main purpose of this course is to help master students for electrical circuits design. The field of this course will not only focus on circuit analysis, but also includes some specific protection circuit and sensors applications. This course is suitable for EE background, especially for hardware circuit designers.
Course objective 課程目標	1.　Students can design an electrical circuit for a system. 2.　Students can use sensors to extend the function of circuits. 3.　Student can study datasheets and related information to create a system or circuit .
Competence 核心能力	Analysis and logical ability are expected.
Prerequisite Course(s) 先修課程或 先備能力	1.　Electronics 2.　Electrical Circuits
Teaching Strategies 教學方法	1.　Group discussion(小組討論) 2.　Learn by practices(實作練習) 3.　Didactic Teaching(講述式教學) 4.　Team Teaching(協同教學)
Course Material 課程教材	1.　SCI Journal papers 2.　Technical books 3.　Textbook
Grading 評量方式	1.　60% Participation, Assignments 2.　20% Midterm 3.　20% Final term
References 參考書目	Engineering Circuit Analysis ISBN：9781118960639
Contact with Teacher 老師聯絡資訊	e-mail:stwu@nfu.edu.tw Phone:05-631-5613

Course Outline 課程進度

1.Basic theory for electrical circuits
2.Components stress and characteristics
3.Power amplifier circuit
4.Filter design
5.Protection circuit
6.AC circuits

7.DC circuits

8.Sensors circuits

9.Commercial integrated circuits

10.Switch driver

11.Final project

The schedule above is adjustable with the studying progress.

Course Rules need to obey

1. Smart phones and laptops are available for vocabularies searching in class. Gaming is NOT ALLOWED in class.

2. Students need to be concentrated in class. The appropriate discussion is allowable.

3. The course is suitable for students with engineering background only (this course is also suitable for graduated students).

Remarks 備註	

Courses taught in English

Course title 課程名稱	Analog Integrated Circuit （類比積體電路）
Course Description 課程概述	In this course, students will learn the analysis and design of analog CMOS integrated circuits. Because analog design requires both intuition and rigor, each concept is first introduced from an intuitive perspective and subsequently treated by careful analysis.
Course objective 課程目標	The objective is to develop both a solid foundation and methods of analyzing circuits by inspection so that students learn what approximations can be made in which circuits, and how much error to expect in each approximation. This approach also enables students to apply the concepts to bipolar circuits with little additional effort
Competence 核心能力	Amplifier analysis and design of analog CMOS integrated circuits
Prerequisite Course(s) 先修課程或先備能力	Electronics
Teaching Strategies 教學方法	General lecturing and inquiry-based learning
Course Material 課程教材	Design of Analog CMOS Integrated Circuits
Grading 評量方式	1. Midterm exam 40%; 2. Final exam 60%
References 參考書目	NA
Contact with Teacher 老師聯絡資訊	TEL: 05-6315667 (Office) Email: wkkuo@nfu.edu.tw

Course Outline 課程進度	
1.　Introduction 2. Basic MOS device physics 3. Single stage amplifier 4. Differential amplifier 　　Midterm exam	5. Passive and active current mirror 6. Frequency response 7. Feedback 8. Operational amplifier 　　Final exam

Remarks 備註	

Course title 課程名稱	Optical engineering in crystal (晶體光電工程)
Course Description 課程概述	As a course in electro-optics for electrical engineering and applied physics students, it presents the propagation of laser radiation in various optical media and instructs in the analysis and design of electro-optical devices. This course presupposes an introduction to Maxwell's equations in electricity and magnetism as well as some mathematical background in Fourier integrals, matrix algebra, and differential equations. Contents, abridged: Electromagnetic fields, Propagation of laser beams, Jones calculus and its application to birefringent optical systems, Electromagnetic propagation in periodic media, Electro-optic devices, and Acousto-optics.
Course objective 課程目標	This course has two primary objectives: to present a clear physical picture of the propagation of laser radiation in various optical crystal and to teach students how to analyze and design electro-optical devices.
Competence 核心能力	Competences of 1, 2, and 4.
Prerequisite Course(s) 先修課程或先備能力	Engineering Mathematics, Calculus
Teaching Strategies 教學方法	Lecture
Course Material 課程教材	A. Yariv and Poche Yeh, "Optical Waves in Crystal", John Wiley and Sons
Grading 評量方式	1. Mid-term report 40% 2. Final Participation 60%
References 參考書目	H. Haus, "Waves and Fields in Optoelectronics"
Contact with Teacher 老師聯絡資訊	Email: eocwc@nfu.edu.tw

Course Outline 課程進度	
1.Electromagnetics 2.Propagation of laser beams 3.Jones calculus 4.Optical birefringence in crystal 5.Electro-optical effect 6.Acousto-optical effect	

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 (侯雍聰)

Course Outline 課程進度	
Week 1 Database System Introduction	Week 10 Advanced Data processing
Week 2 Overview of a Database Management System	Week 11 Big Data I
Week 3 Relational Model of Data	Week 12 Big Data II
Week 4 Algebraic Query Language	Week 13 Big Data III
Week 5 Design Theory of Relational Database	Week 14 Big Data analysis
Week 6 Database Schema	Week 15 Map and Reduce
Week 7 High-Level Database Model	Week 16 RDD
Week 8 E/R Model	Week 17 Spark system
Week 9 Midterm	Week 18 Final Exam

Remarks 備註	

Courses taught in English

Course title 課程名稱	Machine Learning and Big Data (機器學習與大數據)
Course Description 課程概述	The course will discuss recent applications of machine learning, such as to robotic control, data mining, autonomous navigation, speech recognition, and text and web data processing.
Course objective 課程目標	Help students obtain the skills of: 1. Processing of Big Data 2. Ability to adopt algorithms, such as linear regression, decision trees, neural network, etc.
Competence 核心能力	Data processing, Algorithms
Prerequisite Course(s) 先修課程或先備能力	Knowledge of basic computer science principles and skills, at a level sufficient to write a reasonably non-trivial computer program.
Teaching Strategies 教學方法	Instructor introduces the concepts and provides some workshop for students.
Course Material 課程教材	Data Science from Scratch, Joel Grus, O'Reilly
Grading 評量方式	Attendance 20%, Workshop 20%, Midterm exam 30%, Final-term project 30%
References 參考書目	
Contact with Teacher 老師聯絡資訊	05-6315742 drhu@nfu.edu.tw

Course Outline 課程進度	

Big Data
   • Data Source
   • Data Quality
   • Data Integration
   • Open Data
   • Data Modeling
Machine Learning
	• Python fundamental
	• Visualizing Data
	• k_-Nearest Neighbors
	• Linear Regression
	• Decision Trees
	• Neural Networks
	• Clustering

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	

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: week 1 to week 9）

1. **Introduction of Graphs & Networks**
   A preview of graph & network problems to be studied in this course
2. **Network Models**
   Transportation problem
   Linear assignment problem
   Airline crew assignment
   Generalized assignment problem
   Quadratic assignment problem
3. **Set Covering Problem**
   Mathematical model
   Applications

（Part 2: week 10 to week 18）

4. **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
5. **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	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	Service Quality Management (服務品質管理)
Course Description 課程概述	Service quality management emphasizes the recognition, adoption, utilization of the basic principle, knowledge, and practices of service quality management which enables service provider to offer good services and gain competitive adbantages.
Course objective 課程目標	1. Understand the theoretic basis and basic concept of service quality. 2. Understand the theoretic basis and basic concept of service management.
Competence 核心能力	Knowledge of the service quality management concept and practices and how to manage a service business to make ir competitive and profitable.
Prerequisite Course(s) 先修課程或先備能力	No
Teaching Strategies 教學方法	By textbook contents lecturing, benchmarking, student presentation and discussion so the students can be familiar with the basic concept and the practices of service quality management.
Course Material 課程教材	Service Management: Operations, Strategy, Information Technology, Fitzsimmons, 2011, 7 ed. Mc-Graw Hill
Grading 評量方式	Attendance 15% Benchmark Company Report 20%, Chapter Cases Report 20%, BP Report 45%
References 參考書目	
Contact with Teacher 老師聯絡資訊	pchu@nfu.edu.tw

Course Outline 課程進度	
Chapter 1: The Service Economy Chapter 2: Service Strategy Chapter 3: New Service Development Chapter 4: The Service Encounter Chapter 5: Supporting Facility and Process Flows Benchmark Company Report Chapter Cases Report	Chapter 6: Service Quality Chapter 7: Process Improvement Chapter 8: Service Facility Location Chapter 9: Service Supply Relationship Chaper 10: Globalization of Services Term project Business Plan Report
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	Technology Management （科技管理）
Course Description 課程概述	This course provides a series of strategic frameworks for managing high-technology businesses. The emphasis throughout the course is on managing technology-oriented established firms, or starting technology-driven startups. The class consists of lectures, case studies, and discussion among students. As result, students will be asked to analyze, discuss, and present the selected articles during the class.
Course objective 課程目標	After this class, students will be able to (1) select and apply disciplinary knowledge in discussing and creating innovative technological solutions; (2) research, analyze and propose solutions to technology business issues; (3) prepare written professional reports; and (4) deliver well-structured presentations.
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	No
Teaching Strategies 教學方法	Lectures, presentations, and discussion
Course Material 課程教材	• Schilling, M. A. (2012). Strategic Management of Technological Innovation (4th ed), US: McGraw-Hill Education. • Assigned articles and cases
Grading 評量方式	Classroom participation ....30% Mid-term exam..20% Final Project ....30% Final Exam 20%
References 參考書目	Fortune; Harvard Business Review; Sloan Management Review; California Management Review; Bloomberg; Inc.; Fast Company
Contact with Teacher 老師聯絡資訊	

Course Outline 課程進度	
I. The nature of technological innovation II. The strategic impact of technological change III. Technology and competitive advantage IV. Innovation patterns V. Emerging vs. established technologies	

VI. Technological innovation and strategic management VII. Managing technology strategies and the innovation process VIII. Technological innovation and entrepreneurship IX. Lessons from technological firms	
Remarks 備註	

Courses taught in English

Course title 課程名稱	Behavioral Finance (行為財務)
Course Description 課程概述	Behavioral finance plays a more and more important role in the development of financial management and investment. This course focused on the behavioral factors which influence financial markets and investors. People are all prone to having psychological preconceptions or biases that make us behave in certain ways. These biases influence how we assimilate the information we come in contact with on a daily basis.
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	No
Teaching Strategies 教學方法	Oral and discussion
Course Material 課程教材	Nofsinger, R. John, 2001,*Investment Madness*, Prentice Hall, 2001 Journal of behavioral finance
Grading 評量方式	mid-exam 30% final exam 40% presentation and participation 30%
References 參考書目	Montier, James, 2002, *Behavioral Finance: Insight into irrational Minds and Markets*, John Wiley & Sons, Ltd
Contact with Teacher 老師聯絡資訊	chilin@nfu.edu.tw

Course Outline
課程進度

X. Your Behavior matter	XVIII. Mental accounting and diversification
XI. Overconfidence	XIX. That's not the way I remember it
XII. Overconfidence and investing	XX. What I know is better
XIII. Status quo- or what I own is better	XXI. The internet investor
XIV. Seeking pride and avoiding regret	XXII. Exuberance on the net
XV. Double or nothing	XXIII. Self-control or the lack of it
XVI. Social aspects of investing	XXIV. Battling your biases
XVII. Mental accountingr	

Remarks 備註	

Courses taught in English

Course title 課程名稱	Strategic Management (策略管理)
Course Description 課程概述	Lecture and case study will be used primarily. First of all, Professor will introduce overall content of each chapter by power point presentation. Then students will be assigned to do case study. Besides, paper work will be completed after class.
Course objective 課程目標	This course aims to introduce the topics of strategic management, including the introduction of strategic management, external environment analysis, international resources analysis, business-level strategy (strategic positioning and competitive advantages, etc.), corporate-level strategy (growth strategy and diversification, etc.), strategic alliance, merger and acquisition strategy, international strategic management, strategy innovation and entrepreneurship and strategy implementation. Students can comprehend the importance and impacts of strategic management on the operations of contemporary firms, and learn to formulate an appropriate strategy of a company. In addition, by discussing real cases, the students also can understand the practices of strategy of firms. By doing so, the students can apply the concepts of strategy in analyzing real cases.
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	No
Teaching Strategies 教學方法	Lecturing, Case Analysis, Field trip, and Interview with entrepreneur
Course Material 課程教材	Hill, Schilling, and Jones (2017), Theory of Strategic Management with cases, 13 th edition, South-Western Cengage Harvard Business Review, Journal of Strategy Management
Grading 評量方式	Case analysis 30%、Participation 30%、Final Project 40%
References 參考書目	Hill, Schilling, and Jones (2017), Theory of Strategic Management with cases, 13 th edition, South-Western Cengage
Contact with Teacher 老師聯絡資訊	evehsu@ms22.hinet.net

Course Outline 課程進度	
Introduction to the cause Ch1　Strategic Leadership Case 1: GE's Ecomagination Strategy Ch2　External Analysis Case 2: The U.S. Airline Industry Ch3　Internal Analysis	Ch7 Strategy and Technology Case 7: The Rise of Cloud Computing Ch8 Global Strrategy Case 8: Avon Products Ch9 Corporate-Level Strategy: Horizontal Integration, Vertical Integration, and Strategic

Case 3: Competitive Advantage at Starbucks Ch4　Building Competitive Advantage Through Functional-Level Strategy Case 4: Lean Production at Virginia Mason Ch5　Building Competitive Advantage Through Business-Level Strategy Case 5: Lululemon Ch6 Business- Level Strategy and the Industry Environment Case 6: Consolidating Dry Cleaning	Outsourcing Case 9: The Rapid Consolidation of the U.S. Airline Industry Ch10 Corporate-Level Strategy: Formulating and Implementing Related and Unrelated Diversification Case 10: VF Corp. Acquires Timberland to Realize the Benefits from Related Diversification
Remarks 備註	

Courses taught in English

Course title 課程名稱	Information Management (資訊管理)
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	Organizationl Behavior (組織行為)
Course Description 課程概述	Organizational behavior (OB) studies the influence that individuals, groups, and structure have on behavior within organizations. The chief goal of OB is to apply that knowledge toward improving an organization's effectiveness.
Course objective 課程目標	In this course, students will learn motivation theory and application, how decisions are made in organizations, foundations of team behavior, communication skills and techniques, leadership theories, group dynamics, conflict management, work design, organizational change and development.
Competence 核心能力	
Prerequisite Course(s) 先修課程或先備能力	None
Teaching Strategies 教學方法	Organizational behavior lends itself to a heavy emphasis on experiential exercises. The course will consist of lecture, self-assessment, discussion, cases and application through experiential exercises for both the individual and group. Student-led exercises will be a major part of the student learning experience. Students also have an opportunity to exercise the OB concepts in a learning group.
Course Material 課程教材	Organizational Behavior (15th edition) By Stephen P. Robbins and Timothy A. Judge
Grading 評量方式	Class Participation 30% Discussions and Analyses 30% Final Project 40%
References 參考書目	
Contact with Teacher 老師聯絡資訊	graceliu@nfu.edu.tw

Course Outline 課程進度

1	**Introduction to Organizational Behavior** Contributing Disciplines to the OB Field	10	**Communication Processes** Organization Communication
2	**Personality Traits and Work Values** Linking an Individual's Personality and Values to the Workplace	11	**Leadership** Traditional and Contemporary Approaches to Leadership
3	**Individual Perception and Decision-Making**	12	**Power and Politics** Causes and Consequences of Political

	The Link Between Perception and Individual Decision Making		Behavior
4	**Job Attitudes** Attitudes and Job Satisfaction	13	**Conflict and Negotiations** The Conflict Process
5	**Motivation I: Basic Concepts** Early and Contemporary Theories of Motivation	14	**Structure and Organizational Behavior** Common Organizational Design
6	**Motivation II: Applied Concepts** Using Reward to Motivate Employees	15	**Organizational Culture** Creating and Sustaining Culture
7	**Moods, Emotions and Organizational Behavior** OB Applications of Emotions and Moods	16	**Organizational Change** Approaches to Managing Organizational Change
8	**Groups** Group Properties	17	**Final Project Presentation**
9	**Teams** Types of Teams	18	**Final Project Presentation**

| Remarks 備註 | |

Courses taught in English

Course title 課程名稱	Project Discussions (II) （專題討論(二)）
Course Description 課程概述	• *Course content:* What is the basic content of the course and what makes it important or interesting? How does the course fit into the context of the discipline? • *Learning objectives:* What should students be able to do by the end of the course? Objectives are most helpful when they are expressed in terms of knowledge and skills that can be readily identified and assessed. For example, the ability to recognize, differentiate, apply or produce is much more readily identifiable than the ability to appreciate or understand. • *Characteristics of class meetings:* What types of activities should students be prepared for? Discussion? Lecture? Small groups? Student presentations?
Course objective 課程目標	The course aims to prepare, develop, determine and initially exemplify a design programme. The course also aims to develop the ability to document and justify design work. Once the course has been passed, students should be able to: 1. Develop and initially determine and exemplify a design programme based on their own selected project brief (What). □ 2. Develop and initially reflect on methods and working processes with reference to the planning and determination of a design programme (How). □ 3. Present, justify and critically discuss students' own proposed design programme (Why).
Competence 核心能力	1. Planning and development of a design programme □ 2. Experimental work in studio, workshops and laboratories Read two articles from a professional journal and write a one page report in unbound format and other formats. □
Prerequisite Course(s) 先修課程或先備能力	1. Design Research Methods 2. Project Discussions (I)
Teaching Strategies 教學方法	Oral presentations and interactive discussions
Course Material 課程教材	Teacher's prepared materials
Grading 評量方式	1. Grades will be determined by a student's performance on a midterm (15%), a final (20%), individual written assignments (20%), and a group project and assignments (45%). The project grades will be as a result of 1) individual

	presentations, 2) demos, 3) project write-ups, and 4) ratings given by the other members of the project team. The class will *not* be graded on a curve. The final grades will be determined by the standard scale of 90% = A-, 80% = B-, etc. 2. Individual homework should be done independently. It is fine to discuss the general techniques and methods required, but you must do your own work in solving the problems and writing up the solutions. *Cheating will not be excused* and will lead to failure in the course. After you turn in your individual homework, you may use this information in the group, combined with others homework, to aid in the project redesigns.
References 參考書目	
Contact with Teacher 老師聯絡資訊	My research office is located in A&H building 5TH Floor. Office telephone: 05-631-5878 Email: stshen@nfu.edu.tw

Course Outline
課程進度

Lecture Week 1-2: Course Introduction Lecture Week 3: Fundamental Concepts Lecture Week 4: Studying Individuals based on each pupil's chosen topic Lecture Week 5: Analysing the detailed contents and structures Lecture Week 6-7: Preparing and Working with the intended presentation Lecture Week 8: Visualizing and finalizing the work Week 9 Mid Term Exam	Lecture 10-11: Discussions and feedbacks Lecture 12: Studying the second chosen topic Lecture 13: Analysing detailed contents and structures Lecture 14-15: Preparing and Working with the intended presentation Lecture 16-17: Visualising and finalizing the work Week 18 Final Term Exam

Remarks 備註	

Courses taught in English

Course title 課程名稱	Multimedia Creativity and Performance Research/Multimedia Creative Presentation Topic(多媒體創作與表現專題研究)
Course Description 課程概述	It is a one-credit course designed to provide students with skills involving presentations and digital graphics based on their chosen master thesis. Students use various hardware and software peripherals as well as the Internet for integrating skills to create a variety of publications. Upon successful completion of the course, students are able to pursue further study in the area of professional interactive multimedia design.
Course objective 課程目標	Upon the successful completion of this course, students should be able to: 1. Multimedia Components a. Compare aspects of multimedia-presentation, desktop publishing, graphic design, digital video production, and digital video production. b. Utilize a variety of input methods. Examples: digital camera, scanners, CDRW, Internet download 2. Enhanced Presentations Modify/enhance slides utilizing a variety of computer options: bullets, graphic art, text art, video clips, sound/music, font size, color, type, and background color a. Utilize slide show skills for preparing presentations: transitions, animations, and timing features b. Utilize various presentation formats. Examples: outline, speaker notes, sorter multimedia design.
Competence 核心能力	3. Read two articles from a professional journal and write a one page report in unbound format and other formats. ☐ 4. Research, create, and present assigned topics projects using Picasa, PowerPoint and other software. ☐ 5. Research and complete a magazine cover. ☐ 6. To help students plan future careers, students will research their chosen careers, write a report, and present to classmates. ☐ 7. Implement C/T Curriculum Core: Life Applications, Workplace Applications, and Project Development
Prerequisite Course(s) 先修課程或先備能力	Design Research Methods
Teaching Strategies 教學方法	Oral presentations and interactive discussions
Course Material	1. Intelligent Multimedia. Managing Creative Works in a Digital World (2010); D. Casanovas P. Bourcier (Editor), & M. Maracke C. Dulong D Rosnay (Editors);

課程教材	ISBN-13: 978-8883980633; ISBN-10: 8883980638.
	2. Indexing Multimedia and Creative Works: The Problems of Meaning and Interpretation (**2005**); Pauline Rafferty (Author) & Rob Hidderley (Author); ISBN-10: 0754632547; ISBN-13: 978-0754632542.
Grading 評量方式	3. Grades will be determined by a student's performance on a midterm (15%), a final (20%), individual written assignments (20%), and a group project and assignments (45%). The project grades will be as a result of 1) individual presentations, 2) demos, 3) project write-ups, and 4) ratings given by the other members of the project team. The class will *not* be graded on a curve. The final grades will be determined by the standard scale of 90% = A-, 80% = B-, etc. 4. Individual homework should be done independently. It is fine to discuss the general techniques and methods required, but you must do your own work in solving the problems and writing up the solutions. *Cheating will not be excused* and will lead to failure in the course. After you turn in your individual homework, you may use this information in the group, combined with others homework, to aid in the project redesigns.
References 參考書目	
Contact with Teacher 老師聯絡資訊	My research office is located in A&H building 5TH Floor. Office telephone: 05-631-5878 Email: stshen@nfu.edu.tw

Course Outline 課程進度	
Lecture Week 1-2: Course Introduction Lecture Week 3: Fundamental Concepts Lecture Week 4: Studying Individuals based on each pupil's chosen topic Lecture Week 5: Analysing the detailed contents and structures Lecture Week 6-7: Preparing and Working with the intended presentation Lecture Week 8: Visualizing and finalizing the work Week 9 Mid Term Exam	Lecture 10-11: Discussions and feedbacks Lecture 12: Studying the second chosen topic Lecture 13: Analysing detailed contents and structures Lecture 14-15: Preparing and Working with the intended presentation Lecture 16-17: Visualising and finalizing the work Week 18 Final Term Exam

Remarks 備註	

Courses taught in English

Course title 課程名稱	Social Interactive Media Research (社交媒體互動研究)
Course Description 課程概述	Social media services such as Facebook and Twitter represent a new class of communication platforms that have become quickly interwoven into the everyday lives of millions of people around the world. In this course we will draw on competing communication perspectives to explore the reasons behind the widespread popularity of these platforms. In doing so we will consider the role of individual choice, social influence, technological influence, and how these three perspectives can be combined. We will further explore the implications of social media for personal relationships, youth culture, organizations, social research, and personal privacy.
Course objective 課程目標	Upon the successful completion of this course, students should be able to: • Apply multiple communication perspectives to make sense of social media adoption and use, through class discussion, the theory paper and the final projects. • Understand the various methodological approaches that can be used to study social media by applying class discussion to reading material. • Discuss social media intelligently using appropriate language and terminology derived from scholarly papers and class discussion. • Understand the implications of social media for a variety of social issues through the course readings and class discussion. • Think abstractly about the role of social media in personal and organizational contexts during class discussion and while writing the theory paper and final project.
Competence 核心能力	8. Demonstrate an understanding of the theory of social networks 9. Develop a command of the vocabulary and characterization of social networks 10. Demonstrate competence in social network research
Prerequisite Course(s) 先修課程或先備能力	N/A
Teaching Strategies 教學方法	Oral presentations and interactive discussions
Course Material 課程教材	All readings assignments are listed below, in the section of this syllabus titled "Schedule of Assignments & Readings." *You do not need to acquire any textbooks for this course.* Our readings will come from other sources. However, if you would like to obtain books to read on the subject, I recommend Social Network Analysis by Christina Prell as a good optional supplement. Our required readings will be accessible in this syllabus as hyperlinks to web pages and online academic journals. Unless the syllabus specifically notes otherwise, all reading assignments for this class are required, and should be completed by the week of the class under which they are listed. Lectures incorporate text, images and videos

	and discussion. They will be listed in this course syllabus and in the course's Blackboard page under the link "Weekly Lectures." You're responsible for reviewing and being familiar with all parts of these lectures, not just the main text. Lectures will be made available on the first day of the week under which they are listed.
Grading 評量方式	This social networks course is designed to build skill, and an essential part of that skill-building is practicing and questioning. Your participation during the class lectures, and your reading of other students' participatory questions and trials, is therefore an essential element of learning. In the weekly schedule for our class contained at the bottom of this syllabus, you'll notice that I ask you to participate by answering questions and posting information during each lecture. To gain credit for that participation, you should make your contributions *during the week that a lecture is introduced*: the specific due date for participation is listed in each week's schedule. Informed, prepared, thoughtful, active participation in class activities and discussion, in a manner that is respectful of and responsive to your peers, will result in a high class participation grade. Carelessness, lack of preparation, inactivity, unresponsiveness and disrespect toward peers will lead to a lower class participation grade. You must positively engage to earn a score. Scores will range from 100 (Outstanding) to 90 (Excellent) to 80 (Good) to 70 (Acceptable) to 60 (Unacceptable) to 0 (None).
References 參考書目	N/A
Contact with Teacher 老師聯絡資訊	My research office is located in A&H building 5TH Floor. Office telephone: 05-631-5871 Email: stshen@nfu.edu.tw

Course Outline 課程進度	
Lecture Week 1-2: Course Introduction Lecture Week 3: Fundamental Concepts and History Lecture Week 4: Studying Individuals, Studying Networks Lecture Week 5: Characterizing Network Structure Lecture Week 6-7: Installing and Working With the Research Program R Lecture Week 8: Measuring and Visualizing Social Networks in R and in R[eal life] Week 9 Mid Term Exam	Lecture 10-11: From 2-Mode to 1-Mode, from Affiliations to Relations Lecture 12: Similarities and Differences in Networks Lecture 13: Patterns in Social Networks Lecture 14: Political Networks Lecture 15: Social Networks Online Lecture 16-17: Social Network Surveillance Week 18 Final Term Exam

Remarks 備註	

Courses taught in English

Course title 課程名稱	International Aviation Regulation (國際民航法規)
Course Description 課程概述	In the class, we will focus on aviation regulations; 1. The foundation of the FAR 2. Conception of Law and Regulation 3. CAR Regulation System 4. EASA Regulation System
Course objective 課程目標	Week 1 Introduction and Preparing Week 2 Introduction to FAR Week 3 Aviation Regulation System Week 4 Freedom of the air Week 5 History of the int'l Aviation Regulation Week 6 History of the FAR Week 7 Conception of Law and Regulation Week 8 Review Week 9 **Mid-Term Exam** Week 10 Introduction to EASA Regulation Week 11 Introduction to CCAR Week 12 Introduction to CAR in Taiwan Week 13 Aircraft and Airman in CAR Week 14 Air Transport Enterprise in CAR Week 15 Aviation Safety Week 16 Int'l Civil Aviation Organization Week 17 Review Week 18 **Final Exam**
Competence 核心能力	Additional term project and presentation will be required to complete the course.
Prerequisite Course(s) 先修課程或先備 能力	Instructor handout
Teaching Strategies 教學方法	See school policy.
Course Material 課程教材	Instructor handout

Grading 評量方式	**Examinations: Midterm(30%), Final(40%)** **Homework** (30%)**:** See Course Materials for assignments & due dates.
References 參考書目	Instructor handout
Contact with Teacher 老師聯絡資訊	telephone number：0987-452141 E-mail：Frank.Lin@nfu.edu.tw

Course Outline 課程進度	
See Course Materials for assignments & due dates.	

Remarks 備註	

Courses taught in English

Course title 課程名稱	Flight 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)	

4. Preparing for Investigation 5. Safety at the Crash Site 6. Priorities and Initial Actions 7. Investigation Techniques for: Engines, Structures, Fire, Aircraft Systems, Instruments, and Recording Devices 8. Wreckage Recovery and Reconstruction	11. Using the Global Positioning Satellite (GPS) System 12. Aircraft Performance Factors 13. Computers and Simulation 14. Human Factors and Accident Pathology 15. Analytical Techniques 16. Reporting Requirements 17. Construction of Reports 18. Investigation Management.
Remarks 備註	