106/1 Courses taught in English(106 學年度第 1 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 Design Engineering (機械設計工程系碩士班)	0253	Dynamics of Multibody Systems （多體動力學）	Elective 選修	3	Yunn-Lin, Hwang 黃運琳	Course Outline
2.	Institute of Automation Engineering(自動化工程系碩士班)	0053	Autonomous Unmanned Vehicle System (自動化無人載具系統)	Elective 選修	3	Meng-Tse, Lee 李孟澤	Course Outline
3.	Institute of Automation Engineering(自動化工程系碩士班)	0054	Artifcial Intelligent Robotics （智慧型機器人）	Elective 選修	3	Yeung-Jaw, Jih 季永炤	Course Outline
4.	Institute of Electrical Engineering (電機工程系碩士班)	0135	FPGA Circuits Design （FPGA 電路設計）	Elective 選修	3	CHI-CHIA, SUN 宋啟嘉	Course Outline
5.	Institute of Electrical Engineering (電機工程系碩士班)	0140	Embedded Systems （嵌入式系統）	Elective 選修	3	HUI-KA, SUI 蘇暉凱	Course Outline
6.	Master of Electro-Optical and Materials Science(光電工程系光電與材料科技碩士班)	0307	Introduction to Micro-optics （微光學導論）	Elective 選修	3	Wei-Qun, Chuang 莊為群	Course Outline
7.	Institute of Computer Science and Information Engineering (資訊工程系碩士班)	0120	Writing for Technical Paper （科技論文寫作）	Required 必修	3	Po-Hsiang, Tsai 蔡柏祥	Course Outline
8.	Institute of Computer Science and Information Engineering	0128	Big Data Analysis （巨量資料分析）	Elective 選修	3	Ji-Han, Jiang	Course Outline

	(資訊工程系碩士班)					江季翰	
9.	Institute of Computer Science and Information Engineering (資訊工程系碩士班)	0123	Internet of Things （物聯網）	Elective 選修	3	Ming-Shen, Chien 簡銘伸	Course Outline
10.	Institute of Electronic Engineering （電子工程系碩士班）	0083	Advanced Object-Oriented Programming （進階物件導向程式）	Elective 選修	3	Yu-Sung, Liu 劉育松	Course Outline
11.	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0359	Marketing Management （行銷管理）	Elective 選修	3	Mam-Shin, Cheng 鄭錳新	Course Outline
12	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0362	Business Data Analysis （企業資料分析）	Elective 選修	3	Chih-Chin, Liang 梁直青	Course Outline
13.	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0360	Corporate Financial Management （公司財務管理）	Elective 選修	3	Chi-Lin, Lu 呂麒麟	Course Outline
14.	Master program of Business Management of Department of Business administration (企業管理系經營管理碩士班)	0378	Strategic Management （策略管理）	Elective 選修	3	Yi Hsu 徐怡	Course Outline
15.	Institute of Industrial	0347	Service Quality Management	Elective	3	Po-Chieng,	Course Outline

	Engineering and Management (工業管理系工業工程與管理碩士班)		（服務品質管理）	選修		Hu 胡伯潛	
16.	Institute of Industrial Engineering and Management (工業管理系工業工程與管理碩士班)	0329	Quantitative Research Methodology （數量研究方法）	Required 必修	3	Jyun-Ping, Huang 黃俊平	Course Outline
17.	Institute of Industrial Engineering and Management (工業管理系工業工程與管理碩士班)	0328	Seminar 1 （專題討論（一））	Required 必修	3	Chih-Hsiung, Hu 胡智熊	Course Outline
18.	Institute of Industrial Engineering and Management (工業管理系工業工程與管理碩士班)	0332	Applied Statistics （應用統計學）	Elective 選修	3	Jyun-Ping, Huang 黃俊平	Course Outline
19.	Institute of Information Management(資訊管理系碩士班)	0094	Business Intelligence （商業智慧）	Elective 選修	3	Yung-Tsung, Hou 侯雍聰	Course Outline
20.	Institute of Mechanical and Electro-Mechanical Engineering(動力機械工程系機械與機電工程博士班)	2459	Practical Transmission Engineering (傳動工程實務)	Elective 選修	3	Long-Chang, Hsieh 謝龍昌	Course Outline
21.	Institute of Mechanical and Electro-Mechanical Engineering(動力機械工程系機械與機電工程博士班)	2461	Biofabrication (生醫製造學)	Elective 選修	3	Cho-Pei, Jiang 江卓培	Course Outline

Courses taught in English

Course title 課程名稱	Dynamics of Multibody Systems （多體動力學）
Course Description 課程概述	Multibody system is the study of the dynamic behavior of interconnected rigid or flexible bodies, each of which may undergo large translational and rotational displacements.
Course objective 課程目標	Let students understand “dynamics of multibody systems” 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	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, Ahmed A., 2005, *Dynamics of Multibody Systems*, Cambridge University Press.
Grading 評量方式	Quiz, Mid-term Examination, Final Examination, and Final Project.
References 參考書目	1. Wittenburg, Jens, 2008, *Dynamics of Multibody Systems*, Springer-Verlag Berlin Heidelberg. 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. Reference kinematics 3. Analytical techniques 4. Mechanics of deformable bodies 5. Classical approximation methods 6. Finite-element formulation 7. Computer implementation	
Remarks 備註	

Courses taught in English

Course title 課程名稱	Autonomous Unmanned Vehicle System（自動化無人載具系統）
Course Description 課程概述	The fundamental characteristic of Autonomous Unmanned Vehicle Systems (AUVS) is the absence of a human operator on board. These systems fall into three main categories, land, sea, and air, the latter being the most popular. The development and application of AUVS is a rapidly emerging field of technology in many parts of the world. While much of the media attention has focused on military applications, the civil and commercial sector applications have grown, and continue to grow, stronger with each passing year. With AUVS technology expanding at such a fast pace, the need for understanding this rapid-growing field to the engineering students is increasingly important.
Course objective 課程目標	This 18 weeks long program provides broad and basic knowledge view of autonomous unmanned vehicle systems. During the course, teacher uses computer-based multimedia learning environments with multimedia presentations and video tutorials. This course is divided into 11 parts, logically building up the knowledge, touches on all major areas necessary to cover unmanned vehicle's systems and subsystems, communications, data links, payloads, control, types, roles and applications.
Competence 核心能力	The Capability for Developing an Unmanned Vehicle System
Prerequisite Course(s) 先修課程或先備能力	Automatic Control, System Engineering
Teaching Strategies 教學方法	In-class PPT and Case studies
Course Material 課程教材	Tailor-made teaching materials
Grading 評量方式	Mid-term Oral Presentation 30%, Final Oral Presentation 30%, Design Report 30%, and Roll Call 10%
References 參考書目	Unmanned Systems Documents & Websites
Contact Teacher 老師聯絡資訊	mtlee@nfu.edu.tw, 05-6315388
Course Outline 課程進度	

Part-1: Introduction to “System Engineering” Part-2: History & Applications of the Unmanned Vehicle Part-3: Unmanned Aerial Vehicle Part-4: Unmanned Ground Vehicle Part-5: Unmanned Maritime Vehicle Part-6: The Subsystem of an Autonomous Unmanned Vehicle	Part-7: Case Study: Building an Autopilot for UAV Part-8: Hardware/Software in the Loop Simulation Part-9: Navigation(I) – Inertial Navigation Part-10: Navigation(II) – Global Positioning System (GPS) Part-11: Sensors
Remarks 備註	

Courses taught in English

Course title 課程名稱	Artifcial Intelligent Robotics（智慧型機器人）
Course Description 課程概述	This course covers the topics of programming paradigms of an artificially intelligent robot for applications involving sensing, navigation, path-planning, and navigating with uncertainty. Fundamental theories and architectures of the AI robot would be discussed in the class. The student will be asked to do the real robot programming project in the laboratory and evaluated. Pre-AI or Robotics courses are not required. Some basic programming skill and knowledge on microprocessor will be helpful in the learning and implementing the contents of this course although it is not necessary
Course objective 課程目標	1. Fundamental concepts of AI 2. Developing and programming an AI robotic system
Competence 核心能力	Mathematics 40, Science 40, Engineering 20
Prerequisite Course(s) 先修課程或先備能力	English comprehensive ability
Teaching Strategies	Course lecture and Lab. Project

教學方法	
Course Material 課程教材	Introduction to AI Robotics, Robin R. Murphy, The MIT Press, ISBN 0-262-13383-0
Grading 評量方式	Projects and report Assignment: 30%; Midterm Examine:30%; Final Examine :40%.
References 參考書目	
Contact with Teacher 老師聯絡資訊	5383 josephj@nfu.edu.tw

Course Outline 課程進度	
Chapter 1: Artificial Intelligence and Robotics Chapter 2: Robot Paradigms Chapter 3: The Hierarchical Paradigm. Chapter 4: Biological Foundations of the Reactive Paradigm.	Chapter 5: The Hybrid Deliberative/Reactive Paradigm. Chapter 6: Multi-agents.
Remarks 備註	

Courses taught in English

Course title 課程名稱	FPGA System Design（FPGA 電路設計）
Course Description 課程概述	This course is designed for graduate students who are interested in advanced FPGA design n concept, design methodology, and basic concept of VLSI design. In the meantime, several Labs about the Xilinx Vivado tutorials will be demonstrated. After that, several lectures with the related topics to ZYNQ FPGA development kits 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 FPGA.
Course objective 課程目標	The objective of FPGA System Design is a guidance how advanced FPGA design 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 ● ZYNQ 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	● 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 ● 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. Introduction of VLSI and FPGA 2. Challenges in VDSM and 3D-IC technology for FPGA 3. Xilinx Vivado Labs 4. ZYNQ Labs 5. Colloquium and Mid-Report 6. MPSOC (ARM-FPGA) Introduction and Labs 7. Colloquium Final-Project and Presentation

Remarks 備註	

Courses taught in English

Course title 課程名稱	Embedded System（嵌入式系統）
Course Description 課程概述	The course will introduce the fundamental of embedded system. Moreover, the lab experiences will train the students' practical skills. Installing embedded Linux, making Linux kernel and programming in the Linux environment are included in the lab experiences. Finally, the students will design, implement and present an embedded system project with team work.
Course objective 課程目標	1. Training the basic concepts of embedded system development. 2. Training the basic skills of driver programming and application programming for embedded systems.
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	1. The own teaching materials 2. Wayne Wolf, Computers as Components, Second Edition: Principles of Embedded Computing System Design, Morgan Kaufmann, 2008/8/22. (ISBN：0123743974)
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 Embedded Computing 2. Instruction Sets 3. CPUs 4. Bus-Based Computer Systems 5. Processes and operating Systems 6. Embedded Linux Operating system	

7. The Linux kernel 8. Linux Driver and Application Programming 9. Final Project	
Remarks 備註	

Courses taught in English

Course title 課程名稱	Introduction to Micro-optics（微光學導論）
Course Description 課程概述	1.Introducion 2.Theory of optical waveguides 3.Reflective, refractive and diffractive micro-optics 4.Guided wave micro-optics 5.Micro-optics fabrication 6.Active micro-optics 7.Tunable micro-optics 8.Nano-optics
Course objective 課程目標	This course is an introduction to the theory and technology of micro-optics. It can be divided into three parts:(I) essential optics (II) micro-optics (III) neoteric optics. Essential optics overviews the fundamental of physical optics. The micro-optics introduces the optical theories of micro-optics devices. The remaining parts of this course are devoted to the detail study of the phenomena of liquid optics and nano-optics.
Competence 核心能力	1. Having the fundamental capacity for photoelectric industry and technology 2. Having the capacity for optoelectronic engineering systems, devices or related manufacturing processes 3. Having the ability to discover, analyze and solve problems.
Prerequisite Course(s) 先修課程或先備能力	1. Engineering Mathematics 2. Physics
Teaching Strategies 教學方法	1. Class lectures 2. Experimental demonstrations
Course Material 課程教材	Fundamentals of Micro-Optics
Grading 評量方式	1. Mid-term exam 30% 2. Final exam 40% 3. Participation 30%
References 參考書目	Optical integrated circuits H. Nishihara

Contact with Teacher 老師聯絡資訊	莊為群(Wei-Ching Chuang) 05-631-5663 教師研究室 eocwc@nfu.edu.tw

Course Outline 課程進度	
1. Introduction 2. The physics of light 3. Optical materials 4. Optical interference 5. Interferometer	6. Reflective micro-optics 7. Refractive micro-optics 8. Diffractive micro-optics 9. Guide-wave micro-optics 10. Micro-optics fabrication 11. Tunable micro-optics 12. Nano-optics
Remarks 備註	

Courses taught in English

Course title 課程名稱	Research Writing for Science and Technology (科技論文寫作)
Course Description 課程概述	This course is to help students to apply their analytical and rhetorical skills to the discourses of their chosen disciples (multi-disciplinary basis) and to explore how effective academic writing is achieved. It also helps students (as junior researchers) start from small-scale language points to eventually be able to write an article for publication. These skills gained from this course can also be applicable to other tasks such theses, dissertations, conference/journal papers, technical reports, and/or patent writing etc.
Course objective 課程目標	The gist of this course aims to provide overarching knowledge to help students prepare and write their research related documents.
Competence 核心能力	Students expect to possess the skills and knowledge applying in academic writing of their chosen fields.
Prerequisite Course(s) 先修課程或先備能力	Basic English Writing
Teaching Strategies 教學方法	Lecturing with Slides and Whiteboard
Course Material 課程教材	• Writing Up Research: Experimental Research Report Writing for Students of English,Weissberg and Buker, 2008, 文鶴 (Main Book) • Academic Writing for Graduate Students-Essential Tasks and Skills, Swales

	and Feak, 2007, 文鶴
Grading 評量方式	Attendance 10% Quiz 20% Mid-Term Exam 30% Final-Term Exam 30% Class Participation 10%
References 參考書目	Experimental Reaearch Report Writing for Students of English
Contact with Teacher 老師聯絡資訊	05-6315598 E-MAIL：ptsai@nfu.edu.tw

Course Outline 課程進度	
Academic Writing - Academic Research Writing	I: Academic Writing
	1. Academic Research Writing
	2. Revisions and Response to Reviewers
	3. Article Search and Library Access
	4. Digital Databases
	5. Academic writing approach
Academic Writing - Revisions and Response to Reviewers	Writing Up Research
	1. Introduction
	2. Method
	3. Materials
	4. Results
	5. Discussion
	6. Abstract

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	This course will offer concepts, big data analysis, data mining concepts and techniques, and evaluation tools pertinent. Topics to be included are : (1) Introduction to Big Data, (2) Big Data Analysis Tools, (3) Big Data Analysis Exercises, (4) Introduction to data mining concepts and techniques, (5) Mid-Exam, (6) Papers study and Reports, and (7) Final Team Project, etc.
Course objective 課程目標	1. Introduction to Big Data Analysis and applications. 2. Introduction to Big Data Analysis Tools. 3. Introduction to data mining concepts and techniques. 4. Papers study and Reports for recently research results. 5. Final Team Project for Big Data Analysis Exercises.
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, Data Structure, and Database Design
Teaching Strategies 教學方法	Class teaching, papers or technical reports studying, and team project practicing
Course Material 課程教材	1. Jiawei Han, Micheline Kamber and Jian Pei, Data Mining: Concepts and Techniques (Third Edition), Morgan Kaufmann Publishers, July 2011. ISBN 978-0123814791. 2. Papers study and Reports for recently research results.
Grading 評量方式	1. Attends class and discussion 20% 2. Mid Exam 20% 3. Papers or technical reports studying 30% 4. project practicing 30% (Team project practicing)
References 參考書目	1. Viktor Mayer-Schönberger; Kenneth Cukier (2013). Big Data: A Revolution that Will Transform how We Live, Work, and Think. Houghton Mifflin Harcourt. ISBN 9781299903029. OCLC 828620988. 2. Jure Leskovec; Anand Rajaraman; Jeffrey D. Ullman (2014). Mining of massive datasets. Cambridge University Press. ISBN 9781107077232. OCLC 888463433. 3. Press, Gil (2013-05-09). "A Very Short History Of Big Data". forbes.com. Jersey City, NJ: Forbes Magazine. Retrieved 2016-09-17. 4. "Survey on Big Data Using Data Mining" (PDF). International Journal of

	Engineering Development and Research. 2015. Retrieved 14 September 2016.
Contact with Teacher 老師聯絡資訊	E-mail：jhjiang@nfu.edu.tw

Course Outline 課程進度	
Week 1~2: Introduction to Big Data Week 3: Big Data Analysis Tools 1 Week 4: Big Data Analysis Exercises 1 Week 5~7: Introduction to data mining concepts and techniques(Part 1) Week 8: Final Team Project Proposal Week 9: Mid-Exam	Week 10~12: Papers study and Reports Week 13~14: Introduction to data mining concepts and techniques(Part 2) Week 15: Big Data Analysis Tools 2 Week 16: Big Data Analysis Exercises 2 Week 17: Final Team Project Report 1 Week 18: Final Team Project Report 2
Remarks 備註	

Courses taught in English

Course title 課程名稱	Internet of Things (物聯網)
Course Description 課程概述	Basic principle and example of EPCGlobal IOT system will be introduced. Several IOT applications and papers are presented in this course.
Course objective 課程目標	Students will learn and prepare for International EPCglobal Certification. Students will also implement a simple IOT application project in this course.
Competence 核心能力	Viewing subject with an International perspective. Able to plan and work on a project. Specialized knowledge of Information engineering.
Prerequisite Course(s) 先修課程或先備能力	NULL
Teaching Strategies 教學方法	Courses. Real system implementation.
Course Material 課程教材	Self-made material.
Grading 評量方式	Certification 45% Implementation 45%

	Term 10%
References 參考書目	NULL
Contact with Teacher 老師聯絡資訊	E-Mail : jianms@nfu.edu.tw

Course Outline 課程進度	
Before Midterm	After Midterm
1. Introduction 2. EPC Architecture 3. RFID Architecture 4. EPCGlobal Certification	5. IOT Systems 6. IOT Real Applications

Remarks 備註	NULL

Courses taught in English

Course title 課程名稱	Advanced Object-Oriented Programming (進階物件導向程式)
Course Description 課程概述	This course introduces the student to object-oriented programming through a study of the concepts of program specification and design, algorithm development, and coding and testing using a modern software development environment. Students learn how to write programs in an object-oriented high level programming language. Topics covered include fundamentals of algorithms, flowcharts, problem solving, programming concepts, classes and methods, control structures, arrays, and strings. Throughout the semester, problem solving skills will be stressed and applied to solving computing problems.
Course objective 課程目標	The main objective of this course is to provide the students with usable information on: • Understand and use the basic programming constructs of C/C++ • Manipulate various C/C++ datatypes, such as arrays, strings, and pointers • Isolate and fix common errors in C++ programs • Use memory appropriately, including proper allocation/ deallocation procedures • Apply object-oriented approaches to software problems in C++ • Write small-scale C++ programs using the above skills

Competence 核心能力	1. Ability to apply C++ features to program design and implementation 2. Ability to explain object-oriented concepts and describe how they are supported by C++ including identifying the features and peculiarities of the C++ programming language 3. Ability to use C++ to demonstrate practical experience in developing object-oriented solutions 4. Ability to design and implement programs using C++ 5. Ability to analyze a problem description and design and build object-oriented software using good coding practices and techniques 6. Ability to implement an achievable practical application and analyze issues related to object-oriented techniques in the C++ programming language 7. Ability to use common software patterns in object-oriented design and recognize their applicability to other software development contexts
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 using computer 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	Starting Out With C++, 7th Edition, Tony Gaddis/ Pearson ISBN-10: 0-13-310002-2
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	C++ Primer, 5th Edition, S. B. Lippman, J. Laioie, B. E. Moo/ Addison-Wesley
Contact with Teacher 老師聯絡資訊	E-mail: ysliu@nfu.edu.tw Tel: +886-966333666 Office: DEPARTMENT OF ELECTRONICS ENGINEERING / Room ATC401-1
Course Outline 課程進度	
W1 W2~W3 W4 W5~W6 W7~W8 W9	Ch1 Getting Started and Ch2 Simple C++ Ch3 Basic Types and Data Dealing and Ch4 Operators Ch5 Expressions and Statements and Ch6 Functions Ch7 Functions Revisited and Ch8 Arrays and Strings Ch9 Pointers and Ch10 Pointers Revisited Midterm Examination Ch11 Structures and Other Data Types and Ch12 Classes

W10~W11 W12~W13 W14 W15~16 W17 W18	• Ch13 Advanced Classes and Ch14 Destructor and Copy Constructor • Ch15 Overloading Operators and Ch16 Inheritance • Ch17 Virtual Functions and Abstract Classes and Ch18 File Operations • Ch19 Templates and Exception Handling and Ch20 Large Programs • Project study Final Examination
Remarks 備註	

Courses taught in English

Course title 課程名稱	Marketing Management（行銷管理）
Course Description 課程概述	Ch 1 Defining Marketing Ch 2 Developing Marketing Strategies and Plans Ch 3 Scanning the Environment Ch 5 Creating Customer Value Ch 6 Analyzing Consumer Markets Ch 8 Identifying Marketing Segments and Targets Ch 10 Crafting the Brand Position Ch 12 Setting Product Strategy Ch 13 Designing and Managing Services Ch 14 Developing Pricing Strategies and Programs Ch 15 Designing and Managing Integrated Marketing Channels Ch 17 Designing and Managing Integrated Marketing Communications
Course objective 課程目標	1. Understanding Marketing Management 2. Capturing Markketing Insights 3. Connecting with Customers 4. Building Strong Brands 5. Shaping the Marketing Offerings 6. Delivering Value 7. Communicating Value
Competence 核心能力	1. Planning 7 2. Marketing management skill 10 3. Enhancing cooperation 5 4. Innovation 5 5. Problem solving 7

	6. Expanding vision 6 7. Business practice 5
Prerequisite Course(s) 先修課程或先備能力	Listen and speak in English
Teaching Strategies 教學方法	ORAL
Course Material 課程教材	Kotler and Keller (2012), Marketing Management, 14th ed., Pearson Education, Inc.
Grading 評量方式	Class Assignment:40%; Presentation of Paper or Marketing Planning:40%; Class Participation:20%.
References 參考書目	Pride and Eerrell (2011), Marketing Management, 4th ed., South-western, Cengage Learning
Contact with Teacher 老師聯絡資訊	mscheng@nfu.edu.tw

Course Outline
課程進度

Ch 1 Defining Marketing	Defining Marketing	
	introduction	
Ch 2 Developing Marketing Strategies and Plans	Developing Marketing Strategies and Plans	
Ch 3 Scanning the Environment	Scanning the Environment	
Ch 5 Creating Customer Value	Creating Customer Value	
Ch 6 Analyzing Consumer Markets	Analyzing Consumer Markets	
Ch 8 Identifying Marketing Segments and Targets	Identifying Marketing Segments and Targets	
Ch 10 Crafting the Brand Position	Crafting the Brand Position	
Ch 12 Setting Product Strategy	Setting Product Strategy	
Ch 13 Designing and Managing Services	Designing and Managing Services	
Ch 14 Developing Pricing Strategies and Programs	Developing Pricing Strategies and Programs	

Ch 15 Designing and Managing Integrated Marketing Channels	Designing and Managing Integrated Marketing Channels
Ch 17 Designing and Managing Integrated Marketing Communications	Designing and Managing Integrated Marketing Communications
Remarks 備註	

Courses taught in English

Course title 課程名稱	Business Data Analysis（企業資料分析）
Course Description 課程概述	This course is broken into four main topic areas each covered in approximately one quarter of the course: 1. Introduction to Experimental Design, Causal Analysis, and Data Mining: What is it? Why is it important? Why is it interesting? Definitions and theories and how they apply (or not) to real cases. 2. Modeling: Building modeling through experimental design, survey, data collection, and modeling techniques that the participants can understand how to model the research target. 3. Innovation in Data Analysis: What new ways of doing experimental design, causal analysis, and data mining can be used to enhance business data analysis? 4. Practice: Analyzing business data through a designed experiment, a conducted survey, or a set of prepared data from a case company to find the operation procedures of data analysis.
Course objective 課程目標	Experiments and surveys need statistics to find the useful implications behind to the audiences. Nowadays, the use of structural equation modeling (SEM) and advanced statistics methods have mushroomed in these decades. SEM is widely recognized as one of the most powerful and most comprehensive methods for testing causal relationships among factors. Data mining, or intelligent analysis of information stored in data sets, has recently gained a substantial interest among practitioners in a variety of fields and industries. Nowadays, almost every organization collects data, which can be analyzed in order to make better decisions, conclude customer patterns, improve policies, detect credit fraud, predict important events, monitor, and evaluate reliability, etc. The course will provide conceptual bases of SEM and advance statistics as well as applications necessary to undertake researches. Students will learn to critically think about causal relations, measurement of variables, and testing of theories. There will also be plenty of demonstrations and hands-on exercises using SPSS AMOS version 18. Additionally, this course will provide the participants with understanding of the data mining methodologies, and with the ability of formulating and solving problems with them. Students will have a chance to understand the complicated environment of today’s data mining business market.
Competence 核心能力	problem solution, multi-dimension thinking, systematic analysis, and business analysis.

Prerequisite Course(s) 先修課程或先備能力	N/A
Teaching Strategies 教學方法	Oral presentation, case discussion
Course Material 課程教材	Barbara M. Byrne（2001）.Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming. Lawrence Erlbaum Associates. Handbook of partial least squares (2016). Springer Berlin Heidelberg.
Grading 評量方式	Presentation 20% Homework and Discussion 40% mid-exam/report 20% final-exam/report 20%
References 參考書目	
Contact with Teacher 老師聯絡資訊	chihchin@nfu.edu.tw

Course Outline
課程進度

Research Framework	Foundations of Information systems in business competing with information technology
	How to build up a research framework
How to Build up Research Motivation	What is research motivation. How to write a rational motivation.
Discussion of Managerial Implications	1. What are the scholar's concerns? 2. What are the manager's concerns?
Logical thinking and writing	1. What is a logical thinking? 2. debate and argument? 3. claims or a theoretical argument? 4. How to convince the audiences?
Discussion of Questionnaire	What is survey? what is data mining? What do we concern about the development of a questionnaire?

	How to form your question items? A logical thinking about question items? What do you want to measure?
Discussion of Causality Relationship Analysis	The introduction of AMOS. What do we concerns about the analysis using AMOS? Tests and checks are always needed after an analysis.
Discussion of smartPLS	What is smartPLS? What is the difference between AMOS and smartPLS? What is the research implications behind? How to use smartPLS to measure causality relationship?
Experimental Design	What is experimental design? Why we need the experimental design? small samples? large samples? Why we need to perform an experiment with multiple times? Do we need the outside effect?
Data Mining	Why do we need data mining? What do we do about the mining? Algorithm and its performance?
Remarks 備註	

Courses taught in English

Course title 課程名稱	Corporate Financial Management（公司財務管理）
Course Description 課程概述	The course introduce most areas of corporate finance which a manger need to know, including the financial statements, valuation of financial assets, capital budgeting, risk management, long term financial policy, short term financial planning, cash management and dividend policy.
Course objective 課程目標	This course studies fundamentals of corporate finance and capital markets, emphasizing the financial aspects of managerial decisions. The course draws also focus on empirical research to help guide managerial decisions, so students have to read some journal papers on the same times.
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
Course Material 課程教材	Principle of corporate finance, by Brealey, Myers and Allen, 2nd concise edition.
Grading 評量方式	mid-exam 30% final exam 40% presentation and participation 30%
References 參考書目	Journal of corporate finance
Contact with Teacher 老師聯絡資訊	chilin@nfu.edu.tw

Course Outline
課程進度

1.financial background 2.financial analysis 3.time value of money 4.valuation of bond 5.valuation of stock	1An Overview of Finance
	2Financial Background
	3Cash flow and financial analysis
	4financail sysytem
	5time value of money
	6the valuation of bonds
	7the valuation of stocks
	8risk and return
1.risk and return 2.capital budgeting 3.cost of capital 4.capital structure 5.dividends	9.capital budgeting
	10.cash flow estimation
	11.cost of capital
	12capital sturcture
	13coporate restructuring

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	Strategy is a set of related actions that managers take to increase their company's performance. This class will provide students solid theory and practical business cases to learn how to resolve problems.
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	
Teaching Strategies 教學方法	Lecturing, Case Analysis, Field trip, and Interview with entrepreneur
Course Material 課程教材	Jones and Hill (2013), Theory of Strategic Management with cases, 12 th edition, South-Western Cengage
Grading 評量方式	Case analysis 30%、Participation 30%、Final Project 40%
References 參考書目	Theory of Strategic Managemewnt with cases
Contact with Teacher 老師聯絡資訊	evehsu@ms22.hinet.net

Course Outline
課程進度

Topic	Units
Beginning to Mid-term Exam	Introduction to the cause Ch1 Strategic Leadership
Part I: Introduction to Strategic Management	Case 1: The Evolution of Wal-Mart Ch2 External Analysis Case 2: The Market for Large Commercial Aircraft
Part II: The Nature of Competitive Advantage	Ch3 Internal Analysis Case 3: Verizon Wireless Ch4 Building Competitive Advantage Through Functional-Level Strategy Case 4: Amazon.com Ch5 Building Competitive Advantage Through Business-Level Strategy
Mid-term to Final Exam	Case 5: Nordstrom Ch6 Business- Level Strategy and the Industry Environment Case 6: How to Make Money in Newspaper Advertising Ch7 Strategy and Technology Case 7: A Battle Emerging in Mobile Payments
Part III: Strategies	Ch8 Global Strrategy Case 8: Ford's Global Strategy Ch9 Corporate-Level Strategy: Horizontal Integration, Vertical Integration, and Strategic Outsourcing Case 9: Outsourcing and Vertical Integration at Apple Ch10 Corporate-Level Strategy: Formulating and Implementing Related and Unrelated Diversification Case 10: Citigroup: The Opportunities and Risks of Diversification

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	Acknowledge and emphasize the essential uniqueness of service management. Some key features are: extensive use of examples, emphasize the theme of managing services for competitive advantage, recognize the integration of technology, operations, and human behavior, emphasize the need for continuous improvement in quality and productivity, etc.
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	English comprehension, ability to write business plan and run a business.
Prerequisite Course(s) 先修課程或先備能力	No
Teaching Strategies 教學方法	1. Lecturing the content of the textbook. 2. Case study. 3. Student case presentation and discussion
Course Material 課程教材	Service Management, 7th ed. Fitzsimmons & Fitzsimmons, 2011.
Grading 評量方式	Attendance 15%, Term project 1 40%, Term project 2 45%
References 參考書目	Service Quality Management, Mouch, 2009.
Contact with Teacher 老師聯絡資訊	Tel: (05) 6315713 e mail: pchu@nfu.edu.tw

Course Outline 課程進度	
Chapter 1: The Role of Services in an Economy Chapter 2: The Nature of Services Chapter 3: Service Strategy Chapter 4: New Service Development Chapter 5: Technology in Services Term project 1 presentation	Chapter 6: Service Quality Chapter 7: Supporting Facility and Process Flows Chapter 8: Process Improvement Chapter 9: The Service Encounter Chapter 10: Service Facility Location Term project 2 presentation

Remarks 備註	

Courses taught in English

Course title 課程名稱	Quantitative Research Methodology（數量研究方法）
Course Description 課程概述	An introducing course of quantitative mathematical models.
Course objective 課程目標	To learn the mathematical tools for management problems.
Competence 核心能力	Application of quantitative mathematical models.
Prerequisite Course(s) 先修課程或先備能力	None.
Teaching Strategies 教學方法	Lecture.
Course Material 課程教材	Quantitative Analysis for Management by Barry Render, Ralph M. Stair, Jr. Michael E. Hanna. ISBN-13 978-0-273-75286-8
Grading 評量方式	Homework assignment 30%, Mid-term exam. 30%, Final exam. 40%
References 參考書目	1. Mathematical statistics with applications by Wackerly, Mendenall and Scheaffer. 2. Linear programming and network flows by Bazaraa, Jarvis and Sherali.
Contact with Teacher 老師聯絡資訊	Email:jphuagn@nfu.edu.tw Tel:05-6315714

Course Outline 課程進度	
Ch2 Probability and Statistics Ch3 Decision Making Ch4 Regression Models Ch 9 Transportation and assignmrnt models Ch 10 Network models Ch 12 Waiting and Queuing models	

Remarks 備註	

Courses taught in English

Course title 課程名稱	Seminar 1（專題討論（一））
Course Description 課程概述	First, all students must introduce themselves, and then present some features of their countries or the countries they select all in English. Secondly, some English IE-related articles from News or Magazines are provided, and students must present the review in English. Finally, some English IE-related research papers are provided, and students also present the review in English.
Course objective 課程目標	1. Students are going to understand more about other countries. 2. Students are going to do literature review and discuss in English.
Competence 核心能力	English Communication Capability Global Understanding Capability of Literature Review
Prerequisite Course(s) 先修課程或先備能力	Basic English Communication Capability
Teaching Strategies 教學方法	Lecture Student Presentation Discussion
Course Material 課程教材	News/Magazine articles Research papers
Grading 評量方式	Presentation 70% Participation 30%
References 參考書目	None
Contact with Teacher 老師聯絡資訊	chh@nfu.edu.tw 05-631-5720 05-631-5004

Course Outline 課程進度	
Introduction Introduce yourself Introduce the education system of your country Introduce the demography of your country Introduce the culture of your country Introduce the economy of your country	Introduce the tourism of your country Introduce optional title of your country Presentation and discussion of Industrial Engineering Related Articles Presentation and discussion of Research papers

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	Business Intelligence（商業智慧）
Course Description 課程概述	This course aims at giving students an understanding of basic BI concepts, terminologies and technologies. This course serves as a comprehensive introduction to the various aspects of BI, including the business impacts, management and relevant information technology.
Course objective 課程目標	The student will learn the theoretical and practical knowledge from both the technical and organization perspectives.
Competence 核心能力	System Management, Information Technology
Prerequisite Course(s) 先修課程或先備能力	NA
Teaching Strategies 教學方法	Lectures, discussions, presentation, and HW assignments
Course Material 課程教材	1. Business Intelligence (2nd Edition) by Efraim Turban, Ramesh Sharda, Dursun Delen, and David King (Jul 28, 2010) 2. The Kimball Group Reader: Relentlessly Practical Tools for Data Warehousing and Business Intelligence by Ralph Kimball, Margy Ross, Warren Thornthwaite, and Joy Mundy (Feb 8, 2010)
Grading 評量方式	Presentation Midterm & Final report
References 參考書目	NA
Contact with Teacher 老師聯絡資訊	Dept. of Information Management, Yung-Tsung Hou 05-6315731

Course Outline 課程進度			
Week 1	Business Intelligence Introduction	Week 10	BI with Balanced Score Card
Week 2	BI Architecture	Week 11	BI and Big Data
Week 3	Business Strategies and Performance Indicators	Week 12	Big Data Introduction I
		Week 13	Big Data Introduction II
Week 4	Dimensional Modeling and Data	Week 14	BI and Big Data System I

Warehousing Week 5 Information Retrieval and Transformation Week 6 Information Handling Week 7 Cube and Business Analytics Week 8 OLAP Week 9 Midterm	Week 15 BI and Big Data System II Week 16 Advance BI Analytical tools Week 17 BI and Big Data Application Week 18 Final Report
Remarks 備註	

Courses taught in English

Course title 課程名稱	Practical Transmission Engineering(傳動工程實務)
Course Description 課程概述	1. Introduction of transmission systems. 2. Basic principles of transmission systems. 3. Kinematics of transmission systems. 4. Learn how to design the transmission systems for special purpose.
Course objective 課程目標	Teaching students to understand the basic principles of transmission systems, and further to learn how to design the transmission systems for special purpose.
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	Mechanisms and dynamics of machinery (Hamilton F. Mabie and Charles F. Reinholtz, John Wiley & Sons, 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 Belts and chains 1.2 Gear transmission 1.3 Fluid transmission 1.4 Frictional transmission 1.5 Clutches and Brakes Chapter 2 Gear mechanism 2.1 Classification of gears 2.2 Nomenclature 2.3 Fundamentals of gearing 2.4 Standard gear 2.5 Tooth action of involute gears Chapter 3 Gear trains 3.1 Classification of gear trains 3.2 Ordinary gear train 3.3 Planetary gear train 3.4 Application of planetary gear train 3.5 Assembly of planetary gear train Chapter 4 Kinematic and Efficiency Analysis of Planetary Gear Trains 4.1 Introduction 4.2 Train Value Equation 4.3 Latent Power Theorem 4.4 Mechanical Efficiency Equations 4.5 Design Example 4.6 Conclusion Chapter 5 Kinematic Design, Efficiency Analysis, Engineering Design, and Prototype Manufacture of Planetary-Gear Hub for Bicycle 5.1 Introduction 5.2 Existing design 5.3 Train Value Equation	

5.4 Kinematic design 5.5 Efficiency analysis 5.6 Conclusion Chapter 6 Meshing Efficiency of Spur Gear train 6.1 Gear applications 6.2 Sliding velocity 6.3 Meshing Efficiency Equation 6.4 Gear reducer 6.5 Meshing Efficiency analysis 6.6 Conclusion Chapter 7 The Innovative Design of Automatic Transmission for Electric Motorcycles 7.1 Introduction 7.2 Existing design 7.3 Innovative design 7.4 Kinematic design 7.5 Conclusion Chapter 8 The Systematic Design of Planetary-Type Grinding Devices for optical fiber ferrules and wafers 8.1 Introduction 8.2 Grinding Devices 8.3 Kinematic Equations 8.4 Area Ratio 8.5 Design examples 8.7 Conclusion	
Remarks 備註	

Courses taught in English

Course title 課程名稱	Biofabrication(生醫製造學)
Course Description 課程概述	*Biofabrication* is a practical guide to the novel, inherently cross-disciplinary scientific field that focuses on biomanufacturing processes and a related range of emerging technologies. These processes and technologies ultimately further the development of products that may involve living (cells and/or tissues) and nonliving (bio-supportive proteins, scaffolds) components. The course introduces students to cell printing, patterning, assembling, 3D scaffold fabrication, cell/tissue-on-chips as a coherent micro-/nano-fabrication toolkit. Real-world examples illustrate how to apply biofabrication techniques in areas such as regenerative medicine, pharmaceuticals and tissue engineering.
Course objective 課程目標	1. Students have the ability to describe the principle of biofabrication and the state of art. 2. Can raise the development tendency of biofabrication and artificial organ that relevant to mechanical and electro-mechanical engineering field 3. Can understand the regulation of FDA and market need 4. Can describe the worldwide current program and major project in medicine development
Competence 核心能力	1. Connection modern manufacturing with biofabrication 2. Integration numerical analysis with tissue flow 3. Novel domain description in biofabrication knowledgement 4. Understand the requirement of FDA for medical device 5. Essential requirement for being a biofabrication engineers
Prerequisite Course(s) 先修課程或先備能力	Manufacturing or Material Science and Engineering.
Teaching Strategies 教學方法	PPT presentation with video demonstration. Invited famous scholar to introduce the real cases and share experience. Students need to make group to discuss the given topic or paper. Students need to make their presentation in English to practice the ability of English oral presentation.
Course Material 課程教材	Text book: Biofabrication, refer to **eBook ISBN:** 9781455730049 PPT slide presentation and group discussion
Grading 評量方式	Oral presentation (two cases, 30%), Mid-term exam (20%) and final-term exam (30%), report twice (two cases, 20%)
References 參考書目	Text book: Biofabrication, **Editors:** Gabor Forgacs Wei Sun
Contact with Teacher 老師聯絡資訊	Dr. Cho-Pei Jiang, E-mail: cpjiang@nfu.edu.tw TEL: 631-5395

Course Outline 課程進度	
Week 1	Overview introduction of biofabrication
Week 2	In vitro biofabrication of tissues and organs (part I)
Week 3	In vitro biofabrication of tissues and organs (part II)
Week 4	Invited scholar to give a speech and group discussion
Week 5	Biomaterials for biofabrication of 3D tissue scaffolds (part I)
Week 6	Biomaterials for biofabrication of 3D tissue scaffolds (part II)
Week 7	Topic discussion and paper reading
Week 8	Mid-term exam
Week 9	Projection Printing of Three-Dimensional Tissue Scaffolds with Tunable Poisson's Ratio (part I)
Week 10	Projection Printing of Three-Dimensional Tissue Scaffolds with Tunable Poisson's Ratio (part II)
Week 11	Invited scholar to give a speech and group discussion
Week 13	Fabrication of Microscale Hydrogels for Tissue Engineering Applications
Week 14	Polymeric Membranes for the Biofabrication of Tissues and Organs
Week 15	Topic discussion and paper reading
Week 16	Group presentation
Week 17	Group presentation
Week 18	Final exam
Remarks 備註	