

## 105 學年度第 1 學期校課程委員會議

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## 各系(所)新增課程中英文摘要

### 一、農學院

#### (一) 森林系：

#### 木質纖維化學

2 選

李鴻麟 下

木質纖維植物的分佈十分廣泛，是生質能源的重要原料，本課程將探討構成本質纖維材料中主成分-纖維素、半纖維素及木質素之基本結構、化學性質、應用及其轉換能源之方法，以瞭解與開拓木質纖維材料實際用於生質能源之製造。

#### Lignocellulosic Chemistry

2 E

H. L. Lee, S

Lignocellulosic plants, widespread on earth, are important raw materials for biomass energy making. Cellulose, hemicellulose and lignin are the main compositions in lignocellulosic material, and as such, this course will address their basic structures, chemical characteristics and properties, potential applications and the transformation method for producing biomass energy from lignocellulosic materials.

#### 樹木修剪與維護

2 選

張焜標、下

樹木修剪是最普通的樹木維護程序，此一育林措施包含選擇性移除樹木的部分組織，例如枝條、芽或根。樹木修剪的理由包含枯死木的移除，以減少枝條掉落的危險以維護安全，修整樹型以改善樹木結構與引導生長。修剪前須先了解樹木生物學(tree biology)與區隔理論(compartmentalization)，為何要在適當地方剪，不適當的修剪可能造成維持樹木生命的傷害。枝條直徑超過 10 公分以上者，應採用「三段式鋸斷法」修剪。一個良好的樹木維護計畫，需先檢視樹木受傷害的跡象，通常有明顯的病候與病徵顯示樹木腐朽的發展過程。早期確認這些病候與病徵，隨之適當處理損害所引起的腐朽，以植物健康維護策略(Plant Health Care)控制疫害族群到可忍受程度。

#### Tree Pruning and Maintenance

2 E

K. P. Chang, S

Tree pruning is the most common tree maintenance procedure. It is a silvicultural practice involving the selective removal of parts of a tree tissue, such as branch, buds, or roots. Reasons to prune tree include deadwood removal to reduce risk from falling branches and maintain safety, shaping tree to improve tree structure and directing growth. Pruning cut must be made with a understanding of tree biology and compartmentalization, to know why the placement of pruning cut is so important. Improper pruning can cause damage that remains for the life of the tree. Prune a tree branch using Three - Cuts Method when branch diameter is estimated over 10 cm. A good tree-care program includes searching for hints of trouble by inspecting a tree for wounds and other injuries. There are usually clear signs and symptoms that indicate the development of tree decay. Early recognition of these signs and symptoms, followed by proper treatment, can minimize the damage caused by decay. The Health Care (PHC) approaches are used to control pest population to tolerable levels.

**樹木健康與風險評估****2****選****陳建璋、下**

樹木在生活期間，易受環境氣候、雷擊風害、病蟲害、人為破壞等的影響。因此，樹木亟需加強保育，並維持樹木適當的健康性，而本課程宗旨是將立木階段需對樹木健康性加以監測及風險的評估，利用非破壞性技術瞭解樹木健康性，一般而言，可由目視判斷樹木生長性狀或病蟲害的情形評估樹木優劣性，但若以樹木危險性為考量時，需評估樹幹內部材質健全與否，此可透過不同的非破壞性技術評估材質強度，判斷樹木安全性，並提供進一步的保護措施、補強方式或適當處理。

**Tree Health and Risk Assessment****2****E****J.C.Chen, S**

When trees were living, trees usually injured by climate change, lightning damage, wind damage, plant diseases, insect pests and human being, etc. Therefore, trees needed strengthening conservation to keep trees healthy. The purposes of this course is using nondestructive technique to understanding healthy of trees and monitoring tree health. A variety of tools, equipment and techniques have been developed to evaluate tree stability. To assessment the risk of tree. Generally, we could use visual methods to determine situation of tree growth characters, plant diseases and insect pests. If considering the risk of trees, we usually assessment the trunk internal material, It will help us to make sure the difference of nondestructive technology to assessment the material strength and risk assessment of a tree and providing the protection measures, compensation and appropriate treatment.

**(二) 生物科技系：****生物學跨領域之五創應用****2****選****顏嘉宏(+業師)、(三年級)下**

本課程由教師及業師講解生物學整合性、多面向的相關知識，例如動物、植物、生態、細胞、人體等，再導入五創的概念，即創意、創新、創造、創藝、創業，讓學生選定其有興趣之題目，進行問題/產品導向的教學(PBL 教學法，Problem/Product based learning)，並協助學生將學習成果撰寫成報告及後續的商品化。

**Multidisciplinary innovative application of biology****2****E****assigned, S**

This course will provide the integrated biological knowledge, such as animal, plant, ecosystem, cell biology, and human physiology, and the concept of innovation by teachers from Dept. Biological Science and Technology, and from various industries. Students will do the Problem/Product based learning to complete his/her report and commercialize his/her product if possible.

**進階生物技術****2****選****施玟玲、下**

生物科技快速興起，揭開的基因時代，為使本系學生具備完善生物科技知能，基於已具備生物技術概論的基本知識，本課程延伸介紹生物科技在保健食品、活性天然物、新藥研發及農業上之研發應用，讓學生獲得生物科技之產業應用研發知識技能。在授課教學內容上，

利用講義及影片之數位教材，配合新興的生技研發現況，使學生學習溝通、表達、邏輯思考及解決問題之能力，充分擴展對生物科技之相關知能及視野。

### **Advanced Biotechnology                      2                      E**

Biotechnology emerged rapidly as an important field, and opened a genetic era. In order to provide with complete knowledge of biotechnology, this course introduce biotechnology in more advanced. Courses focus on health food, bioactive compounds, new drug development and research and development in agriculture, students could gain knowledge and skills on industry application. Using digitized teaching materials, coordinating with new biotech situation, so that students gain abilities about communication, expression, logical thinking and solve the facing problems, and, fully expand the knowledge and perspective in biotechnology field.

#### **(三) 動物科學與畜產系：**

### **畜產西班牙文                                      2                      選                                      彭劭于、下**

全世界有 21 個國家以西班牙文為官方語言，以母語而言，西班牙文為全世界第二大語言，於聯合國及 WTO 等世界組織將西班牙文視為正式官方語言。本課程透過訓練學生西班牙文文法、字彙、拼寫與口說以習得教導中美洲、南美洲當地居民經濟動物飼養管理、繁殖技術與育種、動物福祉、簡單醫療、飼料製造與營養與畜產品製造等之能力。

### **Animal Science and Spanish                      2                      E                                      PENG,SHAO-YU, S**

Spanish is the official language in 21 countries around the world. In terms of mother tongue, Spanish is the second largest language in the world. Furthermore, the United Nations and WTO and other world organizations officially regarded Spanish as the official language. This course is through Spanish grammar, vocabulary, spelling, and conversation to train students the capabilities of economic animal feeding and management, reproduction and breeding technology, animal welfare, simple medical care, nutrition and feed manufacturing and manufacture of livestock products to teach local residents in Central and South America.

#### **(四) 植物醫學系：**

### **都市昆蟲學    2                      選**

都市昆蟲學(Urban Entomology)是較新興的應用昆蟲學的分支學科，在先進發達國家受到較多重視，亦蓬勃發展，在我國也逐漸受到關注。本課程主要探討在人類居住的環境中，不論是都市或鄉村，和人類、寵物及植物有交互作用的節肢動物的生物學、生態及其防治策略。

### **Urban Entomology                                      2                      E                      assigned , S**

Urban Entomology (Entomology) is a relatively new branch of applied entomology disciplines, in the advanced countries have been valued in Taiwan has gradually been concerned about. This course explores the biology, ecology and control strategies of arthropods interacting with humans, pets and plants in a human-living environment.

## 攝影在植物醫學上的應用

2

選

鄭光哲 、大學部三上

將近兩百年前，現代攝影發足，逐漸滲透、影響我們的生活及專業各個領域。本課程祈使修習植物醫學的同學能廣泛瞭解現代攝影的基礎內涵，並能運用攝影作為學習及研究上的輔助工具。課程內容分成三部分，首先從攝影簡史開始，相機、鏡頭、配件的介紹，到相關概念的說明。其次是微距攝影，包括常用器材、常用輔助工具或裝置。最後是作品(包含作業)的討論。

## Photography in Plant Medicine

2

E

Nearly two hundred-years ago, modern photography initiated and influenced not only our daily life but also professional careers. The course designed to provide students major in plant medicine with basics of photography and hopefully as aids for studying and research. The course composed of three different parts. First of all , basics on photography , includes formats and mechanics of cameras 、lenses 、accessorys etc..Secondary, focused on micro photography, equipments and sorts of special sets-up wil be discussed. Finally, photos ( includes home works ) will be displayed and discussed by all class members.

傳閱附件 1-2--本校各學院所屬各系(所)課程中英文摘要-工學院

## 二、 工學院

### (一)車輛工程系：

#### 金屬材料

3 選

洪廷甫

本課程首先介紹金屬材料學的基礎理論，如結構、相圖與相變化、缺陷、變形機制、強化機制等。再進行常見金屬材料的概論介紹，如碳鋼、合金鋼、鑄鐵、鎂合金、鋁合金及鈦合金等，期使學生能對金屬材料有一基本認識，增加在車輛設計時選用合適材料的能力。

#### Metallic Materials

3 E

Ting-Fu Hong

This course is to introduce to the students the fundamental theory of metallic materials, such as structures, phase diagram and phase transformation, defects and deformation mechanism, and strengthening mechanisms. Common used metallic materials, such as carbon steels, alloy steels, cast alloys, magnesium alloys, aluminium alloys and titanium alloys are also introduced in the course. The aim of this course is to acquaint students with basic understanding of metallic materials for enhancing their ability of choosing proper materials in vehicle design.

#### 熱機學

3 選

李佳言

本熱機學課程為教導學生對熱機學基本概念認識，以及深入瞭解理論在實際過程與工廠中之應用，使學生對於熱機學建立具體的認識。授課內容包括熱能之特性介紹、熱與功之轉換、氣體性質及圖表之應用、各種熱力循環及其在熱力機械之應用。

#### Heat Engine

3 E

Chia-Yen Lee

The aim of "Heat Engine" is to acquaint the students with the basic principles of heat engines. The course also introduces the students to the practical process of heat engines and their applications in factories. The contents include Introduction to heat and energy, exchange of heat and work, gas properties and their charts, thermal cycles and their applications in machines.



### 三、 管理學院

#### (一)高階經營管理碩士在職專班：

##### 品牌管理專題

3 選

蔡展維

品牌管理是企業重要的經營議題。品牌是甚麼？品牌如何建構？品牌（特別是多品牌）如何經營管理？本課程除了介紹品牌行銷策略和品牌行銷策略規劃以外，還有品牌與企業經營之關聯性。本課程透過品牌相關理論與企業個案實例，引導學生了解品牌行銷之經營管理，並討論企業如何透過品牌要素，品牌認知與品牌形象之建構來營造企業品牌。

##### Strategic Brand Management

3 E

Tsai, Chan-wei

Brand is the most important issue for firms. What is Brand? How to construct the brand? How to manage the brand. This course will introduce the fundamental marketing plan and strategy for the brand, also the correlation with enterprise's management strategy. This class will use the relative brand theory and case study to lead the students to understand the brand marketing and management. And discuss how the business to operate the brand and it's value construction.

##### 專案管理專題

3 選

黃祥熙

本課程透過國際專案管理（International Project Management Association）知識體系，進行有關專案管理知識與實務之傳授。專案管理在於確保專案之規劃與執行能符合「如期（Time）」、「如質（Quality）」、「如預算（Cost）」之目標。專案管理知識課程內容主要劃分為：「技術能力（Technical Competence）」、「情境能力（Contextual Competence）」、「行為能力（Behavior Competence）」三大方向；內容在提供針對專案執行之整合方法，適切地對專案作業與流程予以管理、資源配置、以及時程控制，以有效地達成賦予之目的。

##### Special Topics on Project Management

3 E

Huang, Hsiang-Hsi

This course will be based on the knowledge system of the International Project Management Association, to provide an integrated approach to handle the project management whose main definition can be the process of managing, allocating, and timing resources to achieve a given goal in an efficient and expedient manner. Project management is to ensure a project match the targets of time, quality, and cost control. The major contents of this course will be involved three perspectives which include technical competence, contextual competence, and behavior competence for completing the entire course of the project management special issue.

#### (二)資訊管理系：

##### 巨量資料分析導論

3 選

陳灯能

巨量資料（大數據）意指資料具有巨量性、時效性、多樣性、真實性的 4V 特性，亦即資料的數量極大、變化速度快、資料來源/型態多樣，並且能夠反正真正事實的資料資產。基於上述特性，巨量資料無法利用傳統的技术進行有效的分析處理，本課程介紹巨量資料分析概念及技術，課程內容涵蓋利用程式語言結合統計分析、資料探勘、人工智慧技術，將巨量資料進行有效率的分析及解讀。

##### Introduction to Big Data Analysis

3 E

D.N.Chen

Big data is a data asset with high volume, high velocity, high variety, and high veracity. It exceeds the processing capacity of conventional database systems, and traditional data analysis technologies

cannot be applied on it directly. In this course, we will introduce the concepts and technologies of big data. How to apply statistical analysis, data mining, and artificial intelligence technologies in data big analysis will be the core learning goals of this course.

### **巨量資料分析實務**

### **3 選**

**蔡玉娟**

本課程教學目標旨在訓練學生巨量資料分析的各種演算法，並應用在農業、醫療、長照、財務、商業等決策分析，以培育學生具有獨立完成應用巨量資料分析技術解決真實問題的能力。課程內容涵蓋巨量資料分析基本概念、巨量資料分析演算法(關聯、分類、分群及預測等)、應用實例，進而提升學生大數據分析及決策能力。

### **Big Data Analytics Practice**

### **3 E**

**Y.J. Tsay**

This course is designed for students who need general understanding of big data analysis and its applications. We will begin with the introduction to the algorithms of data mining. Its applications in various fields, such as agriculture, business, medical, healthcare, and finance, will also be discussed. This course covers the basic concepts, methods, and applications of Big Data. Students will be introduced to how programming language to solve real-world data problems, such as big data refinement, predictive modeling, and recommendation engine design. Other data analytics algorithms and their applications may also be discussed.



傳閱附件 1-4--本校各學院所屬各系(所)課程中英文摘要-人文暨社會科學院

#### **四、 人文暨社會科學院**

##### **(一)技術及職業教育研究所：**

##### **技職教育行銷管理專題研究**

##### **2 選**

本課程欲使學生對行銷管理有全面系統化之瞭解，學習市場分析與顧客行為分析之方法，瞭解行銷組合與競爭策略之運用，並將行銷管理的學理原則應用至技職教育現場，探討如何行銷技職教育學校與課程。

##### **Study in Marketing Management of Technological and Vocational Education**

##### **2 E**

This course will give students an overview of marketing management of technical and vocational education. The main subjects are summarized as follows: (1) Analyzing markets and consumer behaviors; (2) Identifying Market Segments and Targets; and (3) Developing marketing strategies and programs. This course enables students to apply the theory of marketing management to the promotion of schools and curriculums of technical and vocational education.

## 五、國際學院

### (一)熱帶農業暨國際合作系：

#### 熱帶蟲害管理

2 選

卡雷納

本課程旨在安排教導生有關熱帶害蟲對農作物的為害和管理方式。本課程將講解熱帶地區農業和城市害蟲環境友善的管制措施。這門課程的學生將學到的幾個重要概念：包括農作物因蟲害問題而損失，對不斷變化的情境所產生的害蟲問題情境，全球氣候變化及其對農業病蟲害綜合防治，生物理性蟲害管理和其他創新蟲害管理方法。

#### Tropical Insect Pests Management

2 E

L. Kafle

This course is designed to teach students about tropical insect pests, their damages and methods to manage them. This course explains the eco-friendly control measures of agriculture and urban insect pests. From this course, students will learn the important concepts on crop losses due to insect pests, changing scenario of insect pest problems, global climate change and its impact on pest problems in agriculture, integrated pest management, bio-rational and other innovative approaches of insect pest management.

#### 農業技術推廣和教育

2 選

卡雷納

農業科學技術推廣概念之一是農民田間學校（FFS），這是一個基於農民的培訓，通過當地教師轉移農業科學和技術。轉移給農民的技術可能是新的農業技術，有效的化學農藥使用和減少化學農藥施用等方法等。本課程教學生如何成為一個優秀的培訓師和一個良好的基於現場的解決問題的研究者。

#### Agricultural Technology Extension and Education

2 E

L. Kafle

One of the agricultural science and technology extension concepts is Farmers Field Schools (FFS) that is a farmers based training to transfer agricultural science and technologies through local instructors. The technologies transferred to farmers could be new agricultural technologies, effective chemical pesticides and ways to minimize the pesticides application etc. This course teaches students how to become an excellent trainer and a good field based problem-solving researcher.

#### 基礎植物保護

2 選

卡雷納

本課程的目的是教導生有關重大植物保護問題，重大植物保護，農作物損害和管理方式。本課程將教導學生害蟲，雜草，嚙齒動物，囤糧蟲害和不同的農藥等的控制措施。這是一個基本的課程，教授學生有關預農業病蟲害的防疫與檢疫問題的控制方法。

#### Fundamentals of Plant Protection

2 E

L. Kafle

This course is designed to teach undergraduate students about major plant protection issues, crop damages and ways to manage. This course teaches students the multi-approaches control measures of insect pests, weeds, rodents, store grain pests and different pesticides. This is a fundamental course to teach students about the approaches of prevention and control (cure) of agriculture pest problems.

#### 熱帶農業栽培系統

2 選

卡雷納 和 楊正澤

本課程重點介紹有關熱帶國家，包括南美，非洲和亞洲的不同農業實務的廣闊視野。雖然許多國家都在熱帶地區，但他們有不同的農業實務。學生將學到在不同國家有那些不

同農業實務以及其理由。

### **Agriculture in Tropical Regions**

**2 E**

**L. Kafle and J. T. Yang**

This course will give a broad vision for students about the different agricultural practices and cropping process of tropical nations in South America, Africa and Asia. Although many nations are in the same tropical zone, they have different agricultural practices. Students will know how and why different agriculture practices are practiced in different nations.

### **熱帶農業和生物多樣性**

**3 選**

**卡雷納 和 楊正澤**

這門課程主要介紹，農業和當地生物多樣性的關係與保護的方法。由於綠色革命和生物技術在農業中廣泛應用後，單一種植在商業性農業佔主導地位，農業生態系多樣化在農業生產和維持，以及保護農業領域中的非作物生物環境的生物多樣化，自然是保護農業和使農業永續性可持續的關鍵。

### **Tropical Agriculture and Biodiversity**

**3 E**

**L. Kafle and J. T. Yang**

This course teaches the relationship between agriculture and local biodiversity and ways to conserve that. After green revolution and application of biotechnology in agriculture, monoculture is predominant in the commercial agriculture. Diversification in agriculture, and maintaining and conserving the biodiversity in the agriculture are the keys to protect the agriculture, and make environment more sustainable.

傳閱附件 2-1—105 學年度二技學生入學適用課程規劃案-森林系

## 二年制森林系(105 學年度課程規劃草案)

## (一)教育目標

1. 培育具備森林培育與保護之人才。
2. 培育推動森林資源保育與永續利用之人才。
3. 培育從事森林資源調查與經營管理之人才。

## (二)校定共同必修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
通識課程 General Education	4	2	2			
二技國文 Two-Year Program Chinese	2		2			國文(閱讀與寫作)(2) 抵修
二技英文 Freshman English	2		2			大一英文(2)抵修
英語聽講練習 103 English Listening & Speaking Practice 103	1	1				
英語聽講練習 104 English Listening & Speaking Practice 104	1		1			
生活服務教育 Student Life Service Education	0	0	0			
通識教育講座 Lectures on General Education	1	1				
合 計	11	4	7			

## (三)專業必修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
樹木學 Dendrology	4	2	2			
樹木學實習 Practice of Dendrology	2	1	1			
地理資訊系統 Geographic Information System	2	2				
地理資訊系統實習 Practice of Geographic Information System	1	1				
林產學 Forest Products	3	3				
森林測量測計學 Forest Survey Measurement	2		2			
森林測量測計學實習 Practice of Forest Survey Measurement	1		1			
育林學 Silviculture	4		2	2		
育林學實習 Practice of Silviculture	2		1	1		
森林經營學 Forest Management	2		2			
森林經營學實習 Practice of Forest Management	1		1			
林場實習 Practice of Forest Farm	2		1		1	
森林生態學 Forest Ecology	4			2	2	
森林生態學實習 Practice of Forest Ecology	2			1	1	
實務專題 Special Projects	1				1	
合 計	33	9	13	6	5	

## (四)專業選修科目

中 文 科 目 名 稱  英	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
原野體驗與技能 Field Experience and Skill Training	2	2				
森林氣象學 Forest Meteorology	2	2				
溝通技巧 Communication Skills	2	2				
森林土壤學 Forest Soils Science	2	2				
森林土壤學實習 Practice of Forest Soils Science	1	1				
林業經濟概論 Introduction to Forestry Economics	3	3				
珍稀植物保育技術 Conservation Techniques for Rare Plants	2	2				
航照判釋 Air-photo Interpretation	2	2				
航照判釋實習 Practice of Air-photo Interpretation	1	1				
森林微生物生態 Forest Microbial Ecology	2	2				
植物分類學 Plant Taxonomy	2		2			
植物分類學實習 Practice of Plant Taxonomy	1		1			
森林野生動物學 Forest Wildlife	2		2			
森林土壤生態學 Forest Soil Ecology	2		2			
植物標本採集與製作 Collection and Processing of Plant Specimen	2		2			
森林美學 Forest Esthetics	2		2			
生物技術 Biotechnology	2		2			
森林特產物開發利用 Exploitation and Utilization of Special Forest Products	2		2			



中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
森林特產物開發利用實習 Practice of Exploitation and Utilization of Special Forest Products	1		1			
林產學 Forest Products	3		3			
濕地植物學 Wetland Plants	2		2			
濕地植物學實習 Practice of Wetland Plants	1		1			
林木菌根 Mycorrhizal Symbiosis	2		2			
林木菌根實習 Practice of Mycorrhizal Symbiosis	1		1			
林木生態生理學 Ecophysiology of Trees	2			2		
林木生態生理學實習 Practice of Ecophysiology of Trees	1			1		
社區林業 Community Forestry	2			2		
社區林業實習 Practice of Community Forestry	1			1		
環境教育與解說 Environmental Education and Interpretation	2			2		
環境教育與解說實習 Practice of Environmental Education and Interpretation	1			1		
植栽設計與配置 Planting Design and Arrangement	2			2		
植栽設計與配置實習 Practice of Planting Design and Arrangement	1			1		
森林資源與環境科學 Forest resources and Environmental sciences	2			2		
特殊環境綠化技術 Greening Techniques on Special Environment	2				2	
特殊環境綠化技術實習 Practice of Greening Techniques on Special Environment	1				1	
資源遙測 Remote Sensing	2				2	
資源遙測實習 Practice of Remote Sensing	1				1	

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
森林遺傳與育種學 Forest Genetic and Breeding	2				2	
休閒遊憩規劃與經營 Leisure, Recreation Planning and Management	2				2	
休閒遊憩規劃與經營實習 Practice of Leisure, Recreation Planning and Management	1				1	
生態旅遊 Ecotourism	2				2	
生態旅遊實習 Practice of Ecotourism	1				1	
生態系動態與功能 Dynamics and Function of Ecosystem	2				2	
保育生物學 Conservation Biology	2				2	
樹木健康管理 Tree Health Management	2				2	
森林保護學 Forest Protection	3				3	
木質纖維化學 Lignocellulosic Chemistry	2				2	
合 計	83	19	25	14	25	

# 森林系

# Department of Forestry

## 一、必修科目 Required Courses

**122001 樹木學**

## 4 必

楊勝任 上、下

本課程目標在使學生具備鑑定樹木種類之能力。其內容如下：樹木的命名、樹木分類的歷史、分類系統、花序及果實、分類的術語、木本蕨類之分類、裸子植物之分類與被子植物之分類。

## 122001 Dendrology

## 4 R

**S. Z. Yang, F, S**

The objective of this course is to provide the students with the ability to identify the various trees in the fields. The contents included the followings: Nomenclature of trees; History of dendrology taxonomy; System of classification; Influences and fruit; Terms of taxonomy; Classification of tree farms; Classification of Gymnosperm; Classification of Angiosperm.

## 122002 樹木學實習

## 2 必

王志強上、下

本實習目標為使學生具備鑑定樹木種類之能力，於實習課程內以實物配合幻燈片，加上野外採集鑑定，訓練同學學以致用而有實際經驗。

## 122002 Practice of Dendrology

## 2 R

**C. C. Wang, F,S**

The objective of this practice course is to provide the students with the ability to identify the various trees in the fields. The contents of practice included the followings: collecting plants in the fields identify and examined by specimens of herbarium and slides, how to use the herbarium and introduce its importance about the study of taxonomy survey of composition of plants in a small areas.

## 122003 地理資訊系統

## 2 必

陳朝圳 下

本課程主要目的在訓練學生對空間資料之處理能力，並以森林資源為對象，講解如何應用地理資訊系統處理林業相關問題。其內容包括：地理資訊系統之基本組成、地理資料結構、空間資料之收集與處理、空間資料管理、森林資源地理資訊系統之架構、森林資源地理資訊系統之執行與分析、空間圖藉資訊之產生、地理資訊之應用與為來趨勢。

## 122003 Geographic Information System 2 R

## R

**C. T. Chen, S**

The course offers a technique training about how to analyses special data, how to use GIS solve the problems of forest resources. Content: Several aspects are included in this class: GIS functional elements; Data structures; Data acquisition and preprocessing; Data management; The GIS structure of forest resources; Manipulation and analysis of FRGIS; Product generation of special information; GIS application and looking toward the future.

**122004 地理資訊系統實習 1 必 陳朝圳 下**

本實習以 ARC/INFO 地理資訊系統為工具，訓練學生如何建立空間資料庫及如何應用，包括地理資訊系統與 ARC/INFO、地理資訊系統計畫之擬定、如何於 ARC/INFO 中取得空間資料、空間資料之位相關係之建立、如何於 ARC/INFO 中取得屬性資料、地理資料庫之管理、地理資料分析、地理資訊之展示、應用實例。

**122004 Practice of Geographic Information System 1 R C. T. Chen, S**

The course use ARC/INFO software as a tool. It train the student how to build and use the special information. Introduction to GIS and ARC/INFO; Staring your ARC/INFO project; Getting special data into ARC/INFO; Making special data usable; Getting attribute data into ARC/INFO; Managing the database; Performing geographic analysis; Presenting the results of the analysis; GIS application.

**122005 林產學 3 必 李鴻麟 上**

(一)本課程講授內容包含:木材組織性質、木材理學性質、林木力學. 林木組織性質:木材巨視(macroscopic, naked eye)特徵,木材微視(microscopic),解剖(anatomic)特徵等。木材理學性質:含水率、比重、吸濕度、吸水性、膨脹收縮、電性關係及熱性質等。木材力學性質:應力與應變、壓縮、拉張、靜曲、剪斷及應度等。

(二)本課程授課之目的主要在使學生習得木材化學性質，木材化學組成分與各種加工處理方式，期能對木材及加工利用上進一步了解。

課程內容包含木材化學、紙漿與造紙、木材保存、木材膠合劑、木材塗裝與尺寸安定處理等。

**122006 森林測量測計學 2 選 陳建璋 下**

森林測量測計學主要是量測木材、單木或林分之數量及其生長之理論與應用，使學生瞭解測量學理與森林測量之技巧，由傳統地面測量學出發，並引入現代化測量及空間技術：其中包含GPS衛星定位測量、攝影測量、遙測、地理資訊系統，無人空中載具等，主要可應用於森林規劃量測。

**122006 Forest Survey Measurement      2      E      J.C.Chen, S**

The major topics in mensuration are theory and application of measuring wood, single tree and stand characteristic such as volume, weight. The purpose of this course is let students to learn the theory about surveying and familiar in this technique. This course introduces the fundamental concepts of geometrics: from the traditional terrestrial measurements to the modern measurement and spatial technologies such as GPS, Photogrammetry and remote sensing, and Geographical information systems, and unmanned aerial vehicles the applications on forest planning and measuring etc.

**122007 森林測量測計學實習      1      必      陳建璋 下**

本課程著重在將量測木材、單木或林分數量及其生長之理論並利用各種測量儀器，培養測量技術，熟練各種測量儀器，將理論結合於森林施業中其內容有 (1).單木胸徑、樹高之量測 (2).伐倒木材積測計 (3).立木材積推測 (4).間接推估立木材積 (5).林分生長量估測 (6).林分材積估測 (7).樹幹解析 8.立木材積表編製。使用儀器包含 (1).距離測量實習(2).電子儀器或光學儀器距離測量(3).羅盤測量(4).平板測量(5).經緯儀測量(6).水準測量(7).森林應用測量。

**122007 Practice of Forest Survey Measurement      1      R      J.C.Chen, S**

This course aims to apply the theory about how to measure the wood, single tree or stand in the forest and let student known how to use the equipment and apply the surveying theory in practice. There are contents (1)diameter of breast height and tree height measurement, (2)volume measurement of fall down tree, (3)estimate the volume of standing tree, (4)indirect estimation the volume of standing tree, (5)estimate growth increment of stand, (6)estimate the volume of stand, (7)stem analysis, (8)yield table establishment. Contents include (1)distance measurement with traditional equipment, (2)electronic or photoelectric equipment for distance measurement, (3)compass survey, (4)plane table survey, (5)traversing, (6)leveling, (7)application on forest surveying.

**122008 育林學      4      必      范貴珠 上、下**

訓練學生熟習森林之建造、發育、撫育及更新的技術，包括林木種子、森林苗圃(裸根苗與容器苗之培育)、人工造林法、天然造林法、森林撫育法(除草、間伐、修枝、施肥及病蟲害防治法)。

**122008 Silviculture      4      R      K. C. Fan, F, S**

Introduction the techniques of establishment, development, care and reproduction of stands of timber, include forest tree seeds; forest nursery (culturing the bareroot and container seedling); artificial reproduction; natural reproduction and tending of forest

(weeding, intermediate cuttings, pruning, fertilization, disease and pest's control).

### **122009 育林學實習**

**2 必**

**范貴珠 上、下**

課程主要係教導學生學習主要的育林及綠化技術，內容包括種子之採集及處理、種子苗之培育（裸根苗及容器苗）、插條繁殖技術、嫁接繁殖技術。另外，包括土壤及立地的整備、病虫害管理、直播造林、栽植造林、疏伐及修枝技術的實習。

### **122009 Practice of Silviculture**

**2 R**

**K. C. Fan, F, S**

The main topics of this course including the collection and treatment of seed; techniques of propagation by seeds (bareroot seedling, container seedlings); cutting and grafting; soil and site preparation; insect and disease management; the techniques of direct seedling; plantation; thinning and pruning.

### **122010 森林經營學**

**4 必**

**陳朝圳上、下**

本課程之目的為使學生瞭解森林經營之基本觀念及方法，以期編訂經營計劃，課程包括森林經營學在林學上之地位、森林經營學之內容、森林經營之指導原則、保續作業、森林作業法、森林收穫、生長、材積生長、形質生長、騰貴生長、總價格生長、林木成熟期、指率、生產期、自然輪伐期、工藝輪伐期、材積收穫最多輪伐期、森林純益最大之輪伐期、財政輪伐期、擇伐林之迴歸期、法正林、法正齡級分配、法正林分排列、法正生長、法正蓄積、法正伐採額、現時林之改良、預備林、預備金、森林經營上之規劃及計劃、收穫預定、面積配分法、材積配分法、材積平分法、折衷平分法、蓄積法、利用率法、較差法、純粹齡級法、生長量法、稽核法、森林區劃、森林測量、森林調查、將來森林經營方針之確定、樹種之選定、作業法之決定、輪伐期之判定、將來收穫之預定、經營管理計劃之編訂、計劃之執行、經營管理計劃之稽核與檢訂。

### **122010 Forest Management**

**4 R**

**C. T. Chen, F, S**

This course is an attempt to give the students the basic idea and method of forest management in order to prepare the management plan; Place of forest management in forestry; Content of forest management; Guide principles of forest management; Sustained working; Silvicultural system; Forest yield; Increment; Volume increment; Quality increment; Price increment; Total price increment; Forest maturity; Indicating percent; Productive stage; Physical rotation; Technical rotation; Rotation of maximum volume yield; Highest forest rent rotation; Financial rotation; Cutting cycle of selection system; Normal forest; Normal distribution of age classes; Normal arrangement of stands; Normal increment; Normal growing stock; Normal yield; Improvement of actual forest; Reserve forest; Reserve fund; Planning and plan of forest management; Forest regulation; Area



allotment; Volume allotting method; Volume frame work; Area-volume combined frame work; Growing stock; Utilization percent method; Difference method; Pure age-class; Growth method; Control method; Forest subdivision; Forest surveying; Forest survey; Certainty of future policy of forest; Selection of species; Decision of silvicultural system; Decision of rotation; Regulation of future yield; Preparation of management plan; Working the plan; Control and revision of management plan.

122011 森林經營學實習	2	必	陳朝圳上、下
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本實習課程係配合“森林經營學”之課程研討而規劃設計，實施方式及內容主要為：學生分組：依研修學生人數，以六位編組、選定實習區：以保力林場為實習區、環境現況調查、資料整理與分析、編訂森林經營計劃書。

**122011 Practice of Forest Management 2 R C. T. Chen, F, S**

The course is designed to complement the course of forest management. Contents includes as following: Grouping students registered in this course; Selecting practice spots; Implementing environmental conditions survey; Coding and analyzing of survey results; Preparation of Forest management plan.

122012 林場實習	3	必	上、下
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本課程藉由實務操作、現場參觀及專業人士演講等三種方式，讓學生能對各項林業工作有較深入的體認。實務操作將包括在校內及保力林場的多項育林及綠化實習；現場參觀包括苗圃、各林業機關及台灣重要生態系的參觀見習；在專業人士演講方面將邀請與林業工作相觀行業具有實務經驗人士至課堂上介紹說明，使學生對將來就業所需知識技能有較好的準備。

**122012 Practice of Forest Farm                      3                      R                      F, S**

By means of practical operations, on-site visiting, and speeches of specialists, this course intends to teach students a profound understanding of various tasks involved in the forest industry. Practical operations include silviculture practices in school and in Pauli Experimental Forest. Onsite visiting will visit forestry-related organization and important ecosystems in Taiwan. In addition, experienced specialists will be invited to instruct students the essential knowledge and techniques to benefit students' future employment.

122013 森林生態學	4	必	楊勝任上、下
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本課程主要介紹森林生態系的基本觀念外，並介紹森林植群的組成、分類、分布、演替以其與環境之間的關係。其授課內容包括例子研讀、族群生態學、互動族群動態與分析、森林植群調查，如樣區設置、取樣、測計、資料整理與分析，以及族群與植群與環境相關性的研究。

**122013 Forest Ecology****4 R****S. Z. Yang, F, S**

This course is designed to introduce the basic concepts of forest ecosystem and composition; classification; distribution; succession of vegetation to the relative environmental factors. The content includes case studies, population ecology; Meta-population dynamics and analysis, the research methods of vegetation such as sample methods; Evaluation and analysis; Raw data matrix preparation of communities; Environmental factors measurements and their relationships to population and vegetation.

**122014 森林生態學實習****2 必****楊勝任上、下**

本課程目的在於讓同學在實際操作各種族群與植群資料搜集與調查方法。其授課內容包括利用生態統計軟體做各種資料分析。內容包括植群分析例子研讀、植群分類、列表比較法、交互平均法、主成份分析、對應分析、極點分布序列分析及結果解釋等等。

**122014 Practice of Forest Ecology****2 R****S. Z. Yang, F, S**

This course is designed to let students practice different sample methods and data preparations about population and plant community. The content includes reading the case studies of vegetation; Using computer programs to analysis the data; Vegetation classification; Tabular comparison; Reciprocal averaging method; Principle component analysis; Correspondent analysis; Polar ordination analysis; Results for interpretations.

**122015 實務專題****1 必****上、下**

本課程在訓練學生運用適當之研究方法完成專題計畫。學生將以團隊合作方式進行資料蒐集、分析、論文撰寫、與專題發表。

**122015 Department of Forestry-Special Projects 1 R****F, S**

This course aims to develop students ability in completing research as well as cooperation work. Students will have to work as a group to finish a study with a special topic they choose. A final oral presentation will be held later this year.

## 二、專業選修科目 Selective Courses

### 122016 原野體驗與技能 2 選 陳美惠 上

前往自然原野從事遊憩活動愈來愈受到年輕人所歡迎，本課程即因應此日愈增加的需求，提供一個完整的戶外活動技能課程，給那些需要前往原野地區從事各種遊憩活動與調查工作的同學。本課程之內容除了正課外，尚有實際操練的實習課程。課程內容包括：活動之計劃與準備，食物與裝備之認識與準備，羅盤儀的使用及地形圖之判圖，各種困難地形之通過技巧，營地之搭設等。

### 122016 Field Experience and Skill 2 E M. H. Chen, F Training

Getting away from it all is becoming increasingly popular, with many people spending most of their free time visiting wild land areas. This course is designed to provide comprehensive guidelines for novice and veteran backpackers who want to explore the wilderness expertly and gently. This course is administered to following process. Beginning with planning and preparation, the contents of this course consider how to get yourself physically fit before trip, and what food and equipment will need. Then follows information on traveling in various conditions from the best way of walking to avoid injury to using maps and compasses and moving over different terrain. Also included is information on setting up a safe, environmentally and friendly camp and dealing with natural hazards such as extreme weather.

### 122017 森林氣象學 2 選 唐 琦 上

本課程先介紹各種氣象要素（如日射、日照、溫度、氣壓、風、雲、霧、降水、蒸發等），其次對於大氣主環流、次環流（季風、氣團、鋒、氣旋）、局部環流（海風、陸風、谷風）、劇烈天氣（雷暴、龍捲風）、颱風、森林氣象災害、林地微氣候形成過程、台灣及中國之氣候加以逐章闡述。

### 122017 Forest Meteorology 2 E C. Tang, F

This course will introduce the meteorological elements (such as solar radiation, sun shine, temperature, humidity, air pressure, wind cloud, fog, precipitation and evaporation) in the initial stage. Then the main circulation of the atmosphere, secondary circulation (monsoon, air masses, front, cyclone), local circulation (sea breeze, land breeze, mountain wind, valley wind), violent weather (thunder storm, tornado), typhoon, forest meteorological disaster, process of microclimate formation on forest land, climate of Taiwan and China will be explain chapter by chapter.

**122018 溝通技巧****2 選****羅凱安 上**

社會愈民主、愈開放，人際間的互動機會愈頻繁，而人際間互動的品質與個人作為和追求目標有相當的關係。一個人是否有能力來作為，除本身自己的專業知識與能力外，溝通與表達的能力也是另一關鍵。本課程以四個主題：溝通的意義、溝通的理論基礎、溝通技巧、與溝通應用當作教學主軸，以串聯為溝通概論的核心知識。本課程就每一個主題採演講-閱讀-導讀-討論為一循環的夾心式教學，可望提昇學生學習興趣與參與。

**122018 Communication Skills****2 E****K. A. Lo, F**

As a society turns into more open and more democratic, interactions among people become indispensable. In addition, the quality of interpersonal interaction is associated with individual deed and achievement. Individuals are capable to accomplish their action that depends on personal competence as well as communication efficiency. The content of this course is composed of four major topics: meanings and reasons for communication, theoretical foundations, communication skills, and applications. This course is administered to following a sandwich-type form: beginning with lecture, then reading, providing advise for re-reading, and discussion lastly.

**122019 森林土壤學****2 選****張焜標 上**

本課程旨在講授有關森林土壤之各種性質，及其與森林植群生長發育之間的關係。授課內容包括：土壤礦物之性質、森林土壤之化育、森林土壤有機質、森林土壤化學性質、森林土壤物理性質、土壤與森林植物營養、森林土壤之分類等。

**122019 Forest Soils Science****2 E****K. P. Chang, F**

The objective of this course is to introduce the properties of forest soils, and their relationship with growth and development of forest vegetation. The contents covered are: the properties of soil minerals, the development of forest soil, the organic matter of forest soil, the chemical properties of forest soil, the physical properties of forest soil, the soils related with forest plant nutrition, the classification of forest soils, etc.

**122020 森林土壤學實習****1 選****張焜標 上**

本實習旨在指導學生有關土壤調查與分析之應用技術。實習內容包括：土壤剖面調查、土壤樣品採集及調製、土壤酸鹼度之測定、土壤質地分析、土壤有機質測定、土壤中磷有效指數測定、土壤中鉀、鈣、鎂有效指數測定、土壤中陽離子交換能量之測定。

**122020 Practice of Forest Soils Science 1 E****K. P. Chang, F**

The objective of this lab. is to offer the training of applied techniques with soil survey and analysis for students. The lab. contents covered are: the survey of soil profile; the collection and preparation of soil samples; the determination of soil pH; the analysis of soil texture; the determination of organic matter content the determination of P availability indices; the determination of K, Ca, Mg availability indices; the determination of cation exchange capacity.

**122021 林業經濟概論****3 選****羅凱安 下**

本課程教授學生瞭解林業經濟問題分析之觀念及方法。課程內容除回顧經濟學原理之外，並讓學生瞭解世界和臺灣林業經濟發展的現狀、問題以及未來發展的主要趨勢。培養學生具備有系統的林業經營分析、林產品市場以及森林資源評價的知識，以及實際解決林業經濟問題的能力。對學生未來從事林業經濟及與林業經濟有關的研究和管理工作能力上有所助益。

**122021 Introduction to Forestry Economics 3 E****K. A. Lo, S**

This course teaches students to understand the concepts and analytical methods of forestry economic. Prior to introduction of forestry economic, in addition to review the principles of economics firstly. Then this course introduce students to understand forestry economic development in the world and Taiwan's situation, problems and mainstream development. Students with a systematic analysis knowledge of forestry management, forest products markets and forest resources assessment as well as practical solutions to forestry economic problems. It is helpful for students future engaged in forestry economics related research and management capabilities.

**122022 珍稀植物保育技術****2 選****洪國翔 上**

本課程主要介紹如何落實珍稀物種的保育及其評估。其授課內容包括在族群及互動族群層級，回顧影響族群結構改變的生態與遺傳因子、族群內動態、族群間動態、族群內動態與族群間動態、珍稀物種研究法、復育步驟、復育計畫回顧與評估、復育努力的障礙、建議與結論。

**122022 Conservation Techniques 2 E  
for Rare Plants****K.H. Hung, F**

The course is designed to provide how to assess and conserve the rare plants in the field. The course includes introduction, factors affecting species abundances from population and meta-population levels, within-population dynamics, meta-population dynamics,



overall dynamics, empirical approaches to studying rare species, step toward recovery, review and evaluation of recovery plans, constraints on recovery approaches, recommendations and conclusion.

### **122023 航照判釋**

**2 選**

**陳建璋 上**

本科目係森林測計學之延伸，但以配合航空照片判釋技術及統計方法為主，教授學生如何以航空照片從事大面積之森林資源調查之方法，並配合主要理論之講述，自基本之照片操作技術開始，至製圖技術及資料統計方法止，計含：遙感探測與森林攝影測計及其工作程序、航空照片之拍攝及其名辭釋義、立體觀察與照片判釋、像點位移、林型與土地類型之判釋、林分密度、樹高坡度之測定、照片樣區及地面樣區之調查、材積之統計、生長量與損耗量、平面製圖

### **122023 Air-photo Interpretation**

**2 E**

**J.C.Chen, F**

The basic theory of aerial photo grammetry combined with photo interpretation techniques are taught in this course; Sampling theory and forest survey data compilation are also analyzed. The main topics in this course are: The conception of forest aerial survey and remote sensing and their working procedure; Estimation of the equipment for taking vertical photograph and definitions of photo grammetry; Stereovision and photo interpretation; Displacement of image point; Forest type and land use type interpretation; Measuring of stand density, tree height, and slope of land surface; The survey method of photo and ground plots; Estimation of stand volume; Growth, mortality, and drainage estimation; Drawing of planimetric map.

### **122024 航照判釋實習**

**1 選**

**陳建璋 上**

依課程講授之內容實習之，其內容包括：照片判釋之基本操作，照片描繪及平面圖轉繪、面積計算與材積之統計及誤差之計算，野外樣區之調查記錄與整理等要分為：立體觀察、計算飛行高度與像比尺、照片上地物及地形之判釋、林型之判釋、土地類型判釋、樹冠幅與樹冠密度之測定、雙像視差測高法、坡度測定、照片描繪及製圖、計算材積及生長量、樣區調查法。

### **122024 Practice of Air-photo Interpretation**

**1 E**

**J.C.Chen, F**

Photo interpretation techniques are practiced step by step, photo delineation, mapping procedure and field plot survey method will be trained in the last sections: main items are described as: Exercise on visioning stereogram; Calculate the flying height and photo scale; Land form and objects interpretation; Forest type interpretation; Land use type interpretation; Measuring of crown diameter and crown density; Measuring of tree height



with parallax method; Measuring the slope of plot or a section of land; Photo delineation and plotting of planimetric map; Estimation of stand volume and stand growth; Photo plot interpretation and field plot survey.

### 122025 森林微生物生態

2 選

吳羽婷 上

本課程之目的，在使學生瞭解森林生態系其實存在著豐富的物種，除了地上部植群動物外，其實還有著扮演生態系極重要地位的微生物。這些肉眼看不見的微生物包括原核生物細菌和真核生物真菌主宰環境裡養分的循環。此外，更與植群有著密不可分的关系包括固氮菌、菌根菌、腐生菌甚至是引起森林危害的病原菌等。近來更有研究指出，森林裡的大氣中也存在著所謂的氣生微生物，對於其生態功能也是未知。此課程將介紹真核和原核生物的細胞構造和演化、分類和已知的生態功能。希望藉由此課程可以讓學生更了解森林微生物的重要性。

### 122025 Forest Microbial Ecology

2 S

Y. T. WU, F

The objective of this course is to introduce the microbial diversity in forest ecosystem. Except the plants and animals aboveground, forest ecosystem also harbors diverse microbes with the vital ecological importance. The microbes including prokaryotic bacteria and eukaryotic fungi are not able to be observed by human naked eyes and they mediate the nutrient cycling in the environment. In addition, the microbes also play important role influencing aboveground such as symbionts (nitrogen fixer and mycorrhizal fungi), saprophytes and pathogens which might cause severe forest disaster. Currently, a few studies have revealed the existence of air-borne microbes, however, their function still remains unknown. The course will be started with the introduction of cell structure, evolution, taxonomy and ecological function of bacteria and fungi. The students will learn more about the microbes in the forest ecosystem.

### 122026 植物分類學

2 選

王志強 下

本課程主要介紹植物分類學的目的、原理與發展史。其授課內容包括分類文獻、命名、分類群概念、檢索表製作與使用、野外採集與 PPI 標本館介紹、植物形態描述所使用的術語與圖解、被子植物分類準則、被子植物親源系統關係。

### 122026 Plant Taxonomy

2 E

C. C. Wang, S

This course is designed to introduce the aim of taxonomy, principle and history summary. The content includes taxonomic literatures, nomenclature, concepts of taxa, the construction and use of keys, field collections method and herbarium of PPI introduction, phytography and the terminology of plant description, criteria used in classification of angiosperms and the phylogeny of angiosperms.

**122027 植物分類學實習****1 選****王志強 下**

植物分類學實習乃為使學生在 PPI 標本館與野外具有鑑定維管束植物的能力。其授課內容包括讓學生實際於野外採集並製成臘葉標本、教導學生如何使用科檢索表、以形態術語描述植物外部形態、參訪國內其它標本館並說明其功能與分類的價值、觀察臘葉標本與幻燈片加強野外鑑定能力。

**122027 Practice of Plant Taxonomy 1 E****C. C. Wang, S**

This practice of plant taxonomy is to provide the students with the ability to identify the vascular plants by the herbarium of PPI and in the fields. The content includes collecting plants in the fields and specimens made, using the key to the families to identify the unknown plants in the family level, describing the morphology of parts of plants by the terminology, examining the specimens of herbarium and slides to improve the ability of identification, visiting another herbarium of Taiwan to introduce the function and value to the study of taxonomy.

**122028 森林野生動物學****2 選****陳美惠 下**

本課程旨在介紹森林中生活之各類野生脊椎動物現況以及與森林之間的關係。課程內容包括森林與野生動物的關係、台灣動物地理學、台灣原生野生哺乳類、鳥類、兩生類、及爬蟲類之生物、生態學介紹、森林經營與野生動物經營的關係及台灣森林野生動物之現況。

**122028 Forest Wildlife****2 E****M. H. Chen, S**

The course offers a complete understands about the relationships among wildlife, forest and forestry. The contents cover the introduction to wildlife and forest. After two approaches are presented, rst, the species approach, focus on the biology of and ecology of fauna in forest land scaps, second ,the managing approach, cus on the wildlife management in forest stands, Special topic on the le of Taiwan wildlife is forest and forestry are also discussed.

**122029 森林土壤生態學****2 選****張焜標 下**

本課程目標為瞭解土壤生物在土壤生態系發育過程中所扮演的角色，課程主要介紹土壤生物相之組成分子、發生與分佈、土壤生物所涉及的土壤發育過程、有機物分解與養分循環、土壤動物與微生物之間的相互關係、植物與微生物之間的共生關係，例如生物固氮作用與林木菌根、土壤生物之管理。

**122029 Forest Soil Ecology****2 E****K. P. Chang, S**

The objective of this course is to understand the roles of soil organisms played in the development of soil ecosystem. The major contents include: The components, occurrence and distribution of soil biota; The involvement of soil organisms in the development of soil ecosystem, organic matter decomposition and nutrient cycling; Fauna-microflora interactions; The symbiotic relationship between plants and microsymbionts, such as biological nitrogen fixation and mycorrhizae; The management of soil organisms in the forest lands.

**122030 植物標本採集與製作****2 選****王志強 下**

本課程主要教導學生如何在野外正確採集與處理新鮮標本以及標本館經營管理。其授課內容包括介紹植物標本館，採集目標及採集計畫、野外採集裝備、材料的選擇、壓製標本、以及如何製作完整的標本、標本館分類系統排列、野外記錄、永久標籤、鑑定及歸檔、說明植物標本對物種保育與研究的重要性。

**122030 Collection and Processing of Plant Specimen****2 E****C. C. Wang, S**

The course is designed to provide how to collect and treat plant specimens in the field and the herbarium management. The content includes introduction of plant herbarium, objectives and plans to plant collections, field equipments and methods, collective material selection, management of the herbarium such as loans, curator, duplicate, type method, classification system of herbarium, permanent labels made etc., mount specimens in the herbarium of PPI, file and care the specimens into the cases of Herbarium of PPI, the importance of specimens preserved for plant conservation & study.

**122031 森林美學****2 選****王志強 下**

森林美學是研究森林美的價值及美的施業之一門學科，其內容包括緒論，森林美的分析、森林生態與景觀保育、人的感官及審美意識、景觀施業之理念探討、景觀的調查及計畫、大景觀施業、微景觀施業、美的林間步道、森林美學在育樂上的運用及綠化的美學等。

**122031 Forest Esthetics****2 E****C. C. Wang, S**

Forest esthetics is a science to study on the significance of forest beauty and the management of forest beauty. The course covers the major consideration of the forest esthetics, such as the analysis of the forest ecology and landscape conservation, the sense and consciousness for estheticism of mankind, the rational concept for landscape

management, the inspection and planning for landscapes, the management for both macro-and micro-landscape, the application of the forest esthetics on recreation, and the esthetics of plant plantation.

**122032 生物技術**

## 2 必

洪國翔 下

本課程旨在加強學生對生物技術之了解、其範圍涵蓋遺傳工程技術、細胞融合技術和蛋白質工程技術等三大領域的理論和臨床上應用等方面的學習，培養生物技術相關人才為目的。

**122032 Biotechnology**

**2 R**

K.H. Hung, S

The curriculum will emphasize three major areas, including genetic engineering, hydridoma techniques and protein engineering .The purpose is to train students understanding the concept of biotechnology and their applications.

## 122033 森林特產物開發利用

## 2 選

范貴珠 下

本課程擬使學生了解森林除木材主產物外，尚有許多具高經濟價值之森林特產物值得開發利用。課程內容概分為森林特產物定義及分類、油料樹種、工業及手工藝原料、食用菌類、山蔬及樹實、藥用植物、單寧與染料植物、精油與香料樹種、觀賞樹種及動物性森林副產物。

## 122033 Exploitation and Utilization 2 E

## 2 E

K. C. Fan, S

## of Special Forest Products

The purpose of the course is to give students awareness of many of the special forest products that can be developed and utilized in the forest. The course including definition and classification of special forest products, oils from some wood species, industry and handicraft materials, edible fungi, forest vegetables and tree fruits, medicinal plants, tannin and dye plants, tree species for production of essential oils, aromatic trees, and animals in the forest.

## 122034 森林特產物開發利用實習

## 1 選

范貴珠 下

本課程旨在使學生了解森林特產物之種類、特性、栽培與利用方法，課程內容包括校園森林特產物辨識、森林種子採集及處理、特用樹種之栽培方法、森林種子創意設計、森林材料手工皂製作、雜草及枯落物堆肥製作、廢材利用及森林食材開發利用等。

## 122034 Practice of Exploitation and Utilization

**1 E**

K. C. Fan, S

## of Special Forest Products

The objective of this course is to give students awareness of the category, characteristics, cultural and used methods of special forest products. The course including definition special forest products in on campus, collection and treatment of forest seed, cultural method of special forest species, creative design of forest seeds, using forest material for hand made soaps, using forest litters for making compost, utilization of waste wood and exploit and utilize edible forest materials.

### 122035 林產學

### 3 選

李鴻麟 下

(一)本課程講授內容包含:木材組織性質、木材理學性質、林木力學。林木組織性質:木材巨視(macrosopic, naked eye)特徵,木材微視(microscopic),解剖(anotomic)特徵等。木材理學性質:含水率、比重、吸濕度、吸水性、膨脹收縮、電性關係及熱性質等。木材力學性質:應力與應變、壓縮、拉張、靜曲、剪斷及應度等。

(二)本課程授課之目的主要在使學生習得木材化學性質,木材化學組成分與各種加工處理方式,期能對木材及加工利用上進一步了解。

課程內容包含木材化學、紙漿與造紙、木材保存、木材膠合劑、木材塗裝與尺寸安定處理等。

### 122035 Forest Products

### 3 E

H. L. Lee, S

(一) It contains of three part in this course: (1)wood structure. (2)physic properties of wood. (3)mechanical properties of wood.

#### 1.Wood structure:

To introduce the macroscopic and microscopic characters of wood.

#### 2.Physic properties of wood:

To introduces moisture content, specific gravity, moisture absorption, water absoption ,swelling and shrinkage, electrical characteristics and thermatric properties of wood.

#### 3.Mechanical properties of wood:

To introduce stress and strain, compression, tension, bending, shearing, and hardness of wood.

(二) The purpose of this course is to let the students realize that the properties of wood chemical,properties and processing of wood, and utilization of wood.

The course contents includes the wood chemistry, pulping and papermaking, wood preservatives, wood adhesives, wood finishes and dimen sional stability.



**122036 濕地植物學****2 選****賴宜鈴 上**

本課程旨在介紹生長在不同濕地環境中的濕地維管束植物之多樣性，主要包括蕨類和開花植物等種類，內容則涵蓋濕地植物的基本特性、相關生物學與生態學的知識，並介紹臺灣原生之濕地植物和入侵種水生植物所引發的生態問題。引導學生藉由野外實習的親自觀察與實地體驗，瞭解各種濕地植物的棲地環境和生存威脅因子，並熟悉各種主要濕地植物之分類群和生態習性。修習本課程的學生將可對濕地植物之多樣性有進一步的認識，有助於相關知識及生態觀念之宣導與建立，並可運用於濕地之保育實務。

**122036 Wetland Plants****2 E****I. L.Lai, F**

The main objective of 'Wetland Plants and Excises' is to introduce the biodiversity of vascular plants growing at different habitats of wetland, including the species of ferns, monocots and dicots. The contents comprise basic features of wetland plants, the relevant biology and ecology, and the native species and invasive wetland plants in Taiwan. By way of observation and experiencing from the field trips, students can learn the environmental factors of wetland and the threatening suffered by wetland plants, as well as know the diverse taxa and habitat of them. This course will be helpful to establish conservation concepts, understand the biodiversity of wetland plants and may carry out practical skills on wetland conservation.

**122037 濕地植物學實習****2 選****賴宜鈴 上**

濕地植物實習的進行方式包括室內觀察解說及安排野外實地認識濕地植物的多樣性及操作測量濕地環境因子，使學生加深學習效果。實習的內容將由基本的植物學觀念引入濕地植物的形態、生理及生殖學特性，並介紹濕地植物不同的生活習性，以適當的材料讓學生於實驗室觀察並加以解說。藉由野外實地操作學習及測量濕地的物理環境因子，透過野外實習至不同的濕地環境（鹹水沼澤，河口，紅樹林……等）以認識濕地植物的多樣性。濕地植物的多樣性調查與標本製作保存單元讓學生有練習和主動學習的機會，以呈現成果於期末報告。

**122037 Practice of Wetland Plants****2 E****I. L.Lai, F**

The approaches of 'Practice of Wetland Plants' include wetland plants introduction and observation in lab., physical factors of habitat measurement and investigation, and biodiversity of wetland plants recognition in the field. The contents of this course will comprise biological features and habitats of wetland plants, environmental factors of wetland, and biodiversity of wetland plants at different habitats (salt marsh, estuary, mangroves and so on). The field survey on biodiversity of wetland plants and practice of specimens making may lead students learn directly and impressively. They are asked to



show the results in final report.

### **122038 林木菌根**

**2 選**

**吳羽婷 下**

本課程之目的，在使學生瞭解林木菌根的分類、構造、功能以及應用。課程內容包括：菌根之功能及在生態系之重要性，囊叢枝內生菌根之共生真菌，囊叢枝內生菌根之感染、發育與形態解剖構造，囊叢枝內生菌根之礦物營養生理與生態，內生菌根菌接種源之生產，外生菌根之共生真菌，外生菌根之構造、形態發生及分類，外生菌根之生長與生理，外生菌根菌代謝物的產生，外生菌根植物之生長與碳素代謝作用，外生菌根礦物質養分吸收之生理，外生菌根菌接種源之生產與應用，針葉樹之外內生菌根。

### **122038 Mycorrhizal Symbiosis**

**2 S**

**Y. T. Wu, S**

The objective of this course is to introduce the taxonomy, structure and application of tree mycorrhizae. The course contents included are: the function of mycorrhizae and their importance in ecosystem, the symbiont in VA mycorrhizae, the infection, development and morphology of VA mycorrhizae, the physiology of mineral nutrient and ecology of VA mycorrhizae, production of VA mycorrhizal inoculum, the symbiont in ectomycorrhizae, the structure, morphology and classification of ectomycorrhizae, growth and physiology of ectomycorrhizal fungi, production of metabolites by ectomycorrhizal fungi, growth and carbon metabolism of ectomycorrhizal plants, physiology of nutrient uptake by ectomycorrhizae, production and application of ectomycorrhizal fungus inoculum, ectomycorrhizae in conifers.

### **122039 林木菌根實習**

**2 選**

**吳羽婷 下**

本實習之目的，在使學生上完正課實際瞭解林木菌根的構造、功能以及應用。實習內容包括：囊叢枝內生菌根菌孢子分離、囊叢枝內生菌根染色觀察、內生菌根菌接種及繼代培養、外生菌根菌分離、外生菌根菌構造觀察、繼代培養和太空包培養及外生菌根菌環境復育的應用。

### **122039 Practice of Mycorrhizal Symbiosis**

**2 S**

**Y. T. Wu, S**

The objective of this experimental course is to let the students carry out the isolation of AMF spores, AM observation, AM spores inoculation and subculture of AM spores. In terms of ectomycorrhizae, they will operate how to isolate fungal species from mycorrhiza, ectomycorrhizal observation, subculture on medium as well as on bulk bag. At final, students will also learn how to apply ectomycorrhizal on remediation and reforestation.

### **122040 林木生態生理學**

**2 選**

**郭耀綸 上**

本課程目標為瞭解環境因子對林木的主要生理作用的影響，包括正常情況及處於逆境時之反應課程中將著重物理環境之太陽輻射、水、溫度及養分對林木主要生理作用，包括光合作用、蒸散作用、水分及養分吸收的影響，同時將就林木生理與林木之生存，生長及生產力之間的關係予以討論，最後將討論在不同生育環境林木之

適應機制。

**122040 Ecophysiology of Trees                      2        E                      Y. L. Kuo, F**

The objective of this course is to understand the effects of environmental factors, under normal as well as stressful condition, to major physiological processes of tree species. The environmental factors that will be addressed include solar radiation, water, temperature, and nutrient. The physiological processes discussed include photosynthesis, transpiration, water and nutrient absorption. Relations between physiology and survival, growth and productivity will be discussed. Finally, adaptive mechanisms of tree species to their habitats will be mentioned.

**122041 林木生態生理學實習                      1        選                      郭耀綸 上**

本實習課目的在讓學生操作環境因子及林木生理作用測定儀器,由實際資料中分析整理環境因子對林木生理之作用情形,藉以了解兩者間之關係。課程內容包括:氣溫、葉溫、太陽輻射、土壤水分、雨量、濕度及風之測定方法;植物水勢之日變化;林木光合作用日變化及其受環境因子之影響;乾旱對林木生理作用之影響及林木之耐旱機制;太陽輻射對林木形態發育及生理作用之影響。

**122041 Practice of Ecophysiology of    1        E                      Y. L. Kuo, F  
Trees**

This course deals with the field method and instrumentation in ecophysiology of woody plants. Topics in this practice course include: Measurement of air temperature, leaf temperature, solar radiation, soil moisture, precipitation, humidity and wind speed; Diurnal course of plant water potential; Diurnal changes of plant photosynthesis and the environmental factors; Effects of drought on plant physiology and drought resistance mechanisms; Effects of solar radiation on the morphological and physiological characteristics of trees.

**122042 社區林業                                      2        選                      陳美惠 上**

本課程目標為瞭解社區林業理念與做法。社區林業結合了林業經營與社區發展,所探討的主題包括認識社區林業、現階段林業經營目標、為什麼要推動社區林業、國內外社區林業之發展、社區參與、社區總體營造、綠色產業、林務局的社區林業政策等。教學方式包括老師授課、案例研討與小組討論。

**122042 Community Forestry                      2        E                      M. H. Chen, F**

The objective of this course is to introduce the idea and the methodology of the community forestry. The work for the community forestry combines the management of forestry and the development of communities. The following issues will be discussed in the class: introduction of community forestry, the objectives of concurrent forestry

management, the importance of community forestry, the trend forestry community in the world, the community participation, community integrated development, the green industry, the community forestry policies of Taiwan Forestry Bureau.

### **122043 社區林業實習**

**1 選**

**陳美惠 上**

本課程旨在訓練學生如何將社區林業的理念化為實際行動，培養學生從事社區林業工作所需具備的實務操作能力，並以台灣地區社區林業的實務操作做為課程的主要訓練內容。課程包括：社區林業計畫補助辦法、計畫書撰寫實作、社區會議及居民溝通、社區資源調查及資料建檔、社區參與各項森林經營工作指南、成果報告書撰寫等。

### **122043 Practice of Community Forestry**

**1 E**

**M. H. Chen, F**

The aim of this course is to train students operating the concepts of community forestry into real actions so as to let students have the abilities for related works of community forestry. The class will have case studies of community forestry of Taiwan mainly. The content will be: Introduction of Taiwan community forestry plan, skill for writing the plan, community committee and communication with habitants, resource investigation of community, community participation in forestry management, skill for writing the final report.

### **122044 環境教育與解說**

**2 選**

**羅凱安 上**

本課程目標為教導學生有關環境解說的原理與方法，使學生能在不同場合使用正確及有效的解說技術。課程內容包括：解說概論、環境解說之原則、解說系統之規劃、解說媒體的選擇與使用，以及環境解說之評估。

### **122044 Environmental Education and Interpretation**

**2 E**

**K. A. Lo, F**

This course is designed to train students the principles and techniques of environmental interpretation. Topics of this course includes introduction to interpretation, principles of environmental interpretation, planning of interpretative systems, choice and application of interpretative media, and evaluation of interpretation efforts. During this course students should learn the proper methods and effective techniques of interpretation at various situation and locations.

### **122045 環境教育與解說實習**

**1 選**

**羅凱安上**

本課程目標為教導學生有關環境解說的原理與方法，使學生能在不同場合使用正確及有效的解說技術。課程內容包括：解說概論、環境解說之原則、解說系統之規劃、解說媒體的選擇與使用，以及環境解說之評估。

**122045 Practice of Environmental Education 1 E K. A. Lo, F**  
**and Interpretation**

This course is designed to train students the principles and techniques of environmental interpretation. Topics of this course includes introduction to interpretation, principles of environmental interpretation, planning of interpretative systems, choice and application of interpretative media, and evaluation of interpretation efforts. During this course students should learn the proper methods and effective techniques of interpretation at various situation and locations.

**122046 植栽設計與配置 2 選 王志強 上**

除講述重要植栽材料之生物特性外，並兼顧植栽之設計理論及其應用技術之傳授，諸如植栽材料之選擇及配置、植栽之施工、維護及管理技術等。

**122046 Planting Design and 2 E C. C. Wang, F**  
**Arrangement**

The course will focus on the understanding of the biological characteristic of major planting materials. Application techniques and theory of design and planning of these planting materials will be emphasize also. These basic techniques include the selection and arrangement of planting materials, working techniques on planting, maintenance and management etc.

**122047 植栽設計與配置實習 1 選 王志強 上**

本課程旨在培養景觀設計與施工技術，其內容包括：植栽個案講評、植栽管理及維護、植栽設計、校外參觀見習、植栽施工。

**122047 Practice of Planting Design and 1 E C. C. Wang, F**  
**Arrangement**

The purpose of this course is to provide the ability of landscape planning and working technique. It includes the: case study of landscape planning materials, planning of landscape planning materials, working technique of landscape planning materials, main tending and management of planted planning materials and field trips.

**122048 森林資源與環境科學 2 選 蔡文田 上**

環境科學為一門跨領域知識，基於化學、物理、生物學等科學探討人為活動與其生存環境之關係，故本課程之目的，在使大學部學生瞭解森林資源與環境變遷的影響、功能以及應用關係。授課內容包括：森林資源與溫室效應(氣候變遷減緩)、環境空氣品質、負離子、酸雨、臭氧層破壞、芬多精、水資源品質、林業廢棄物、生質能源等環境議題。



**122048 Forest resources and Environmental sciences**                      **2      E**                      **W.T. Tsai, F**

Environmental science is a multi-disciplinary knowledge which is concerned about the relationship between anthropogenic activity and its living environment on the basis of chemistry, physics, and biology. The objective of this course is to provide undergraduate students at the Department of Forestry to understand the interactions (including effect, function and application) between forest resources and environmental change. The course contents include the following environmental issues: greenhouse effect (climate change mitigation), ambient air quality, anion, acid rain, ozone layer depleting, phytocide, water resource quality, forestry wastes, biomass energy, and so on.

**122049 特殊環境綠化技術**                      **2      選**                      **張焜標 下**

本課程目標為強調受到天然及人為干擾因素所限制的生態環境特性，並探討其恢復植生之技術。課程內容討論本省的森林邊際土地、都市與工業區之環境特性，針對各環境區域之主要特性，如：貧瘠土壤、乾旱土壤、酸性土壤、礦區棄土區域、海岸沙丘地、工業及都市環境等，討論其恢復植生與環境綠化的原則及技術。

**122049 Greening Techniques on Special Environment**                      **2      E**                      **K. P. Chang, S**

The objective of this course is to put emphasis on the characteristics of ecological environment limited by natural conditions and disturbed by human activities, then to stress the techniques of rehabilitation in these areas. The special environment includes the areas of marginal land, urban and industrial parks, saline soils, acid soils, dry soils, mine spoils and coastal sand dune.

**122050 特殊環境綠化技術實習**                      **1      選**                      **張焜標 下**

本實習課程目標為使學生學習如何在特殊環境地區綠化之技術與方法。實習課程內容包括容器苗之培育實習、苗圃育苗經營之參觀實習、壁面綠化苗木之種類及培育、耐蔭植物之種類及培育、耐貧瘠（乾旱、酸性）土壤苗木之種類及培育、汙染（垃圾掩埋）環境之參觀實習、耐鹽直物之種類及培育、泥岩及礦區棄土邊坡綠化之參觀實習、海岸沙丘地之綠化樹種及培育、海岸綠化之參觀實習、工業區及都市環境綠化樹種及培育、耐澇水生植物之種類及實習。

**122050 Practice of Greening Techniques on Special Environment**                      **1      E**                      **K. P. Chang, S**

The objective of this course is to introduce the greening techniques and methods of special environment for students. The major contents include are as followings: Practice on the cultivation of containerized seedlings; Tour of nursery management; Practice on the

species and cultivation of wall greening plants; Practice on the species and cultivation of shade tolerant plants; Practice on the species and cultivation of plants for impoverished (arid and acid) lands; Tour of pollutant lands; Practice on the species and cultivation of salt tolerant plants; Tour of greening on the mudstone and mineral waste lands; Practice on the species and cultivation of coast sandy plants; Tour of coastal greening; Practice on the species and cultivation of plants for industrial area and urban greening; Practice on the species and cultivation of water tolerant plants.

### **122051 資源遙測**

**2 選**

**陳建璋 上**

本課程教導學生有關遙感探測之原理,遙測數位影像之分析方法及其於林業上之應用。其內容包括遙感探測之基本概念、遙感探測之基本原理、太空遙感探測、微波遙測、多譜掃描與波譜型式判別、數位影像處理、數位影像分類、遙感探測於森林資源調查上應用。

### **122051 Remote Sensing**

**2 E**

**J.C.Chen, F**

The purposes of this course are introduce the principle of remote sensing, aware of the analysis methods of remote sensing digital image and with which in forest application. The contents include: Basic concept of remote sensing; Principle of remote sensing; Remote sensing in outer space; Microwave sensing; Multispectral scanning; Processing of digital image; Classify and identify of digital image; Application of remote.

### **122052 資源遙測實習**

**1 選**

**陳建璋 上**

本課程以 ERDAS 等影像處理系統,讓學生實際進行太空遙測數位影像之處理,並討論其於森林資源調查上之應用方法。其內容包括遙測影像之資料格式認識、遙測影像資料之輸入、幾何校正、影像增強、非監督性遙測影像分類、監督性影像分類、遙測影像輸出、遙測數位影像在森林資源調查上之應用。

### **122052 Practice of Remote Sensing**

**1 E**

**J.C.Chen, F**

The purposes of this course are let student aware of the process in processing the digital image by computer software, and discuss the methods about how to apply in forest resources inventory. The contents include: Recognize the format of digital image; Input process in various computer software; Geometric correction; Image enhancement; Unsupervise classification; Supervise classification; Output process in various computer software; Application of remote sensing in forest resources inventory.

### **122053 森林遺傳與育種學**

**2 選**

**洪國翔 上**

本課程之目標為討論林木基因之利用與保育,期能維持森林遺傳資源之歧異度。課程內容包括林木遺傳之理論基礎、林木遺傳變異、林木遺傳改良之方法與實例、改良林木在林業上之應用及其考慮、維持林木遺傳資源歧異度之重要性、林木



遺傳資源之保育與管理。

**122053 Forest Genetic and Breeding 2 E K.H. Hung, F**

The objective of this course is to discuss the use and conservation of forest tree gene for maintaining the genetic diversity of forest resources. The contents include the followings: The basic concept of forest genetics; The genetic variation of forest trees; The methods of forest-tree improvement; The application and consideration of improved tree used in forestry; The conservation and the management of forest genetic

**122054 休閒遊憩規劃與經營 2 選 陳美惠 下**

本課程將幫助學生了解基本的公園與遊憩區之規劃過程及休閒產業經營概念。課程內容大綱包括遊憩之基本概念，遊憩規劃與規劃者應有之特性，相關規劃之了解，遊憩規劃之基本原則，遊憩規劃模式，遊憩需求與需要的分析，遊憩資源之調查與評估，與基地與設施的規劃、休閒產業的競爭力分析、產品開發管理、行銷策略管理、人力資源管理、服務作業管理、財務資金管理及同業異業之策略聯盟等。

**122054 Leisure, Recreation Planning 2 E M. H. Chen, S  
and Management**

The main purpose of this course is to let students understand the basic concepts for the planning process of parks and leisure places. The content of this course includes the basic concepts of recreation, models of recreation, analysis of recreation requirements, evaluation of resources, design of recreation settings, analysis of the industry of recreation, and management of production, marketing, financial, service for recreation.

**122055 休閒遊憩規劃與經營實習 1 選 陳美惠 下**

遊憩規劃與經營實習乃是應用遊憩規劃課程所習得之概念與知識，學習規劃過程及休閒產業經營方式。實習內容包括資源使用調查分析、問卷調查、訪談技巧、規劃課題、規劃方案、休閒產業個案分析及實地參訪等。

**122055 Practice of Leisure, Recreation 1 E M. H. Chen, S  
Planning and Management**

Students will be asked to apply the knowledge and understandings from the course of recreation planning in the practice. Individually, students will involve a selected case study and experience a planning process. And methods for resource investigation, questionnaires, skills of interview, planning skills, case study, visit to recreation places will be included in the teaching activities.

**122056 生態旅遊****2 選****羅凱安 下**

任何土地利用型式均會對環境造成某種程度之衝擊，遊憩利用方式亦不例外。國民對戶外遊憩需求日殷，尤其是政府積極發展遊憩與觀光之下，遊憩與觀光之發展對現有之自然、社會環境將促成巨大的改變。生態旅遊已成為未來觀光旅遊之潮流，本課程主要涵蓋二部份，前半部是介紹生態觀光與永續發展；後半部將從自然的、實質的與社會的衝擊三方面來探討分析遊憩與觀光發展所帶給現有環境之影響。

**122056 Ecotourism****2 E****K. A. Lo, S**

In developing countries around the world, tourism to natural areas, sometimes called ecotourism, is becoming increasingly popular. Ecotourism can generate badly needed revenue for local and regional economics, heightened local awareness of the importance of conservation. However, any kind of land uses will affect environments on a certain level. Tourism and recreation development have no excuse on this statement, too. Although recreation and tourism are of major economic and social significance in the modern society, responsible developmental strategies should be recognized. Both ecotourism and recreational impact management knowledge are provided in this course. The first half of this course introduces ecotourism and its sustainable development. The second half of this course is to understand the traveler and tourist have on the economic, physical, and social well-being of host community.

**122057 生態旅遊實習****1 選****羅凱安 下**

本實習課程可分為在室內與野外二部份：在野外選擇適當之遊憩據點，利用假日前與假日後前往遊客常逗留或使用之地段觀察植被、土壤、水與野生動物之變化。在實驗室內分組討論與分析國內、外遊憩使用對經濟、社會環境之衝擊的例子。

**122057 Practice of Ecotourism****1 E****K. A. Lo, S**

The course of practice of ecotourism development can be divided into two parts. Firstly, at field, on few selected spots, students will be asked to observe and record any change of vegetation, soil, water and wildlife before and after intensive use. In the classroom, group discussion on various issues of impacts derived from recreation and tourism development will be implemented.

**122058 生態系動態與功能****2 選****郭耀綸 下**

本課程講授森林生態系動態及功能的理論，並以熱帶及溫帶森林的例子做討論及比較。內容包括生物間的交互作用、物種豐量與多樣性、食物網、初級生產與能量流、養分循環與留存，以及演替與穩定性。

**122058 Dynamics and Function of****2 E****Y. L. Kuo, S**

## Ecosystem

The theories of forest ecosystem dynamics and functions will be taught in this course. Examples in both tropical and temperate forest ecosystems will be addressed and compared. Major topics include biological interactions, species abundance and diversity, food webs, primary production and energy flow, nutrient cycling and retention, succession and stability.

### 122059 保育生物學

2 選

洪國翔 下

本課程主要目標在使學生瞭解保育工作的生物學基礎。課程內容包括保育生物學與生物多樣性、生物多樣性的危機、生物多樣性的價值、族群保育、生存力分析、自然保護區與國家公園、移地保育 (ex situ conservation)、原住民族生態智慧與社區保育、案例探討等。上課方式含課堂講授、案例分析及小組討論。

### 122059 Conservation Biology

2 E

K.H. HUNG, S

This course is aim to let students have the fundamental concept of biology required for conservation works. The content of this class will include conservation biology and biological diversity, threats to biological diversity, the value of biological diversity, conservation at the population level, the analysis of survival, conservation zones and national parks, ex situ conservation, the biology knowledge of aboriginals and conservation in communities, case study. Beginning with lectures, paper reading, and discussion this course expects students can lean needed concepts.

### 122060 樹木健康管理

2選

梁文進 下

本課主要介紹林木病蟲害之特性、發生調查、診斷及管理，森林病蟲標本採集保存。並介紹苗木、枝幹、葉部、根部病蟲害及立木與木材腐朽等各論。

### 122060 Tree Health Management

2 E

W. J. Liang, S

This course is to introduce the characteristics of damage induced by forest diseases and insect pests. It covers pest investigation, diagnosis and management, and specimen collection and preservation. A comprehensive discussion on pests of seedling, twig, foliage, root and wood decay is also included.

### 122061 森林保護學

3 選

張焜標 下

森林保護學為探討為害森林因子之性質及其發生之原因，並藉預防及驅除之法，以保護森林之學科。內容包括濫墾、盜伐、生育地因子（陽光、氣溫、水分、降雨、

雪、風、閃電、鹽害、毒他作用)、空氣污染、森林火災、野生動物、森林昆蟲、森林病害等之危害及其保護措施。

### **122061 Forest Protection**

**3 E**

**K. P. Chang, S**

Forest protection is to investigate the forest destruction by artificial and natural causes, and how to protect forests by means of precaution and controls. The main topics of this course include the followings: The destruction of forest land by shifting cultivation; Deforest illegally; The injury of site factors (sunlight, air temperature, water content, precipitation, snow, wind, lighting, salt, allelopathy); Air pollution; Forest fires; Wildlife; Forest insects; Forest diseases.

### **122062 木質纖維化學**

**2 選**

**李鴻麟 下**

木質纖維植物的分佈十分廣泛，是生質能源的重要原料，本課程將探討構成木質纖維材料中主成分-纖維素、半纖維素及木質素之基本結構、化學性質、應用及其轉換能源之方法，以瞭解與開拓木質纖維材料實際用於生質能源之製造。

### **122062 Lignocellulosic Chemistry**

**2 S**

**H. L. Lee, S**

Lignocellulosic plants, widespread on earth, are important raw materials for biomass energy making. Cellulose, hemicellulose and lignin are the main compositions in lignocellulosic material, and as such, this course will address their basic structures, chemical characteristics and properties, potential applications and the transformation method for producing biomass energy from lignocellulosic materials.

## 二年制食品科學系(105 學年度課程規劃草案)

## (一)教育目標

培育食品科學理論與加工技術兼修之高級食品加工人才。
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## (二)校定共同必修科目

中 文 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
通識課程 General Education	4	2	2			
二技國文 Two-Year Program Chinese	2		2			國文(閱讀與寫作)(2) 抵修
二技英文 Freshman English	2		2			大一英文(2)抵修
英語聽講練習 103 English Listening & Speaking Practice 103	1	1				
英語聽講練習 104 English Listening & Speaking Practice 104	1		1			
生活服務教育 Student Life Service Education	0	0	0			
通識教育講座 Lectures on General Education	1			1		
合 計	11	3	7	1		

## (三)專業必修科目

中 文 科 目 名 稱  英	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
電腦在食品科技之應用 Application of Computer in Food Technology	2	2				
電腦在食品科技之應用實習 Application of Computer in Food Technology Lab.	1	1				
生物統計 Biometry	2	2				
生物統計實習 Biometry Lab.	1	1				
食品工程學(1) Food Engineering(1)	3	3				
食品微生物 Food Microbiology	3	3				
食品加工(1) Food Processing (1)	2		2			
食品加工實習(1) Food Processing Lab.	1		1			
食品法規 Food Law	2		2			
生物化學(2) Biochemistry (2)	3		3			
食品科技英文 Professional English in Food Science	2		2			
食品衛生與安全 Food Hygiene and Safety	2			2		
食品加工(2) Food Processing (2)	2			2		
食品加工實習(2) Food Processing Lab.(2)	1			1		
合 計	27	12	10	5	0	



## (四)專業選修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
生物學 Biology	2	2				
烘焙學 Baking Technology	2	2				
烘焙學實習 Baking Technology Lab.	1	1				
食品添加物 Food Additives	2	2				
食品行銷 Food Marketing	2	2				
食品生物技術產業與經營 Industrial Business and Management for Food Biotechnology Processing	2	2				
食品分析 Food Analysis	2	2				
食品分析實驗 Food Analysis Lab.	2	2				
食品品質管制 Quality Assurance of Food Products	2	2				
營養學 Nutrition	2	2				
食品殺菌技術 Food Sterilization	2	2				
食品殺菌技術實習 Food Sterilization Lab.	1	1				
食品微生物實驗 Food Microbiology Lab.	1	1				
保健食材之加工與應用 Processing and Application of Health Materials	3		3			
機能性食品理論與應用 Functional Foods	2		2			
應用電工學與實習 Applied Electric Engineering and Lab.	2		2			
食品調理技術 Techniques of Prepared Foods	2		2			
食品調理技術實習 Techniques of Prepared Foods Lab.	1		1			

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
食品加工自動化元件與實習 (1) Food Process Automation and Lab.(1)	3		3			
物理化學 Physical Chemistry	3		3			
微生物檢驗技術 Microbes Detection	2		2			
微生物檢驗技術實習 Microbes Detection Lab.	1		1			
食品化學 Food Chemistry	3		3			
食物學原理 Principles of Food	2		2			
食品冷凍學 Food Freezing Technology	3		3			
食品工廠管理 Food Factory Management	2		2			
實務專題 Practical Projects	2		1	1		
酵素應用技術 Enzyme Methodology	2			2		
酵素應用技術實習 Enzyme Methodology Lab.	1			1		
食品包裝 Food Packaging	2			2		
分子生物概論 Introduction to Molecular Biology	3			3		
新產品開發與實習 Food Product Development and Lab.	3			3		
食品機械 Food Machinery	2			2		
發酵學 Fermentation	2			2		
發酵學實習 Fermentation Lab.	1			1		
感官品評學與實習 Sensory Evaluation and Lab.	3			3		
食品工程學(2) Food Engineering(2)	3				3	

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
食品儀器分析 Instrumental Analysis of Foods	2				2	
食品儀器分析實驗 Instrumental Analysis of Foods Lab.	1				1	
食品生鮮處理技術 Post-harvest Technology	2				2	
食品生鮮處理技術實習 Post-harvest Technology Lab.	1				1	
食品生物化學 Food Biochemistry	2				2	
合 計	84	23	30	20	11	

食品科學系

Department of Food Science

## 一、必修科目 Required Courses

## 362028 食品法規

2 必

林頌生，下

本課程包括食品衛生相關法規之內涵、特色及適用範圍，並介紹食品良好作業規範之精神、執行方法，讓學生瞭解食品工廠之設立、經營管理相關之規定。

## 362028 Food Law

 $2 \quad \mathbb{R}$ 

C. S. Lin, S

This course offers to cover the history, philosophy of food safety related Acts, Laws and Regulations. Emphasis on the background of food regulation and laws. Help the students to understand the regulations and laws required for a food processing and related company.

## 362033 生物學

## 2 選 胡紹揚、施玟玲，上

生物學為研究有生命的科學，教學的目的在於讓所有學生了解生命的複雜性與生命各階層的功能和構造，包含各自分離和合併的功能。這課程主要介紹基礎的理論，讓學生了解生物的基礎知識，進而教導學生瞭解地球上的生物與研究生物的方法。

**362033 Biology**

2 S

**W.L. shih , F**

Biology is the Study of all Living Things. The teaching goal in Biology is to instill in all students a deeper appreciation for the complexity of living organisms and an understanding of how they function together and separately. This course will provide students with an introduction to the basic principles of biology and how they are applied to the search for the origins of life on Earth.

## 362006 食品加工(1)

2 必

邱文貴、  
蔡錦燕 下

本課程包含畜水產加工及蛋乳製品加工。包括原料種類、生化特性、鮮藏與保存，及各類加工技術。並介紹加工過程中之理化變化及產品保存與品質測定。

**362006 Food Processing(1)**

2 R

**W. K. Chiu,  
C. Y. Tsai, S**

The course emphasizes on the processing of meat seafood, milk and egg. Biochemical properties of the raw material, its extended shelf life, preservation and quality check in products during processing are included

## 362007 食品加工實習(1)

1 必 邱文貴、蔡錦燕，下

本課程配合正課的內容，包括肉品生產過程及品管作業包裝，煉製品之罐頭、魚丸、魚蝦醬油及其他加工品之製造及開發。

**362007 Food Processing Lab.(1)**

**1 R**

**W. K. Chiu,  
C. Y. Tsai, S**

The lab provides the chance to practice the processing of dried pork bundle 、 sausage 、 cured meat 、 fish ball 、 dehydrated fish stick and shrimp sauce products.

## 362013 食品加工(2)

2 必

蔡碧仁、  
楊季清，上

本課程主要包含穀類加工及蔬果加工二部分。第一部分介紹穀類之種類、特性及加工原則，並說明各種穀類之處理、貯存，一次加工與再加工成品及利用，第二部份則介紹蔬果中影響色香味質地相關成份與其在加工貯存過程中之變化與防止方法。

<b>362013</b>	<b>Food Processing(2)</b>	<b>2</b>	<b>R</b>	<b>P. J. Tsai,</b> <b>C. C. Yang, F</b>
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The class includes two part of lessons. Part I emphasizes on the variety, characteristics and principles of processing in cereals. All the handling, storage, preliminary processing of the materials and further utilization of the above products, such as bread, cake, noodle etc. are also mentioned. Part2 emphasizes on the characteristic of constituents related to the color, flavor and texture of fruits and vegetables. The quality change during processing and storage and prevention of it are also introduced.

362014 食品加工實習(2)	1	必	蔡碧仁、 楊季清，上
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本實習課程第一部分為穀類加工實習，包含各種穀類之認識及品質判斷，各種配方對產品品質之影響，加工方法，程序之設設與開發。第二部分為蔬果加工實習，包含以各種蔬果進行各式加工，經由操作過程讓學生了解加工成品品質與加工操作間之關係，俾理論與實際能相印證。

<b>362014</b>	<b>Food Processing Lab.(2)</b>	<b>1</b>	<b>R</b>	<b>P. J. Tsai, C. C. Yang, F</b>
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Part1 will on (1) the quality judgment of the grain, flour of cereals(2) effect of formulation on the quality of product(3) development and optimization of processing method, and procedure in cereal products.

Part2 will on relations processing by using fruit and vegetables. Students may understand the relation between quality and processing method and the quality change duving processing and storage.

362015 食品工程學(1) 3 必 林貞信、下

食品工程為介紹學生食品生產製造過程中所涉及和相關的工程概念和理論。課程內容包括數學理論與應用、單位與因次、物質平衡、能量平衡、蒸汽表、黏度概念與流變學、流體的輸送、基礎熱傳學、溼度學和食品熱處理等。

<b>362015</b>	<b>Food Engineering(1)</b>	<b>3</b>	<b>R</b>	<b>J. S. Lin, S</b>
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Objectives of this course are to introduce students the concepts and principles of food engineering involved in the food manufacturing processes. Contents of this course include a review of mathematical principles and the applications in food engineering, units and dimensions, material balances, energy balances, steam tables, viscosity and rheology, transport of fluids, basic heat transfer, psychrometry, and heat treatments of foods.

362025 食品微生物	3	必	謝寶全、邱秋霞、 郭嘉信，上
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講授與食品有關的微生物及其各種有關的生理、酵素等一般的概念。利用食品微生物之發酵技術來製造食品的方法，以及食品腐敗之原因與其防止方法。

<b>362025</b>	<b>Food Microbiology</b>	<b>3</b>	<b>R</b>	<b>P. C. Shieh, C.H.Chiu,</b>
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**J. H. Guo, F**

The course is to teach the food related microorganisms and the common concept of their physiological, enzyme etc. Application the fermentation technique of microbes on food processing. The food putrefaction and the contamination prevention were also introduced.

**362027 生物化學(2)****3 必****許祥純、  
吳美莉 下**

修讀學生需具備生化分子結構之基本概念，本課程將介紹此些生化分子在生物體內之代謝與合成，了解生物體如何由此些生化分子獲取能量及合成生長所需之大分子。其授課內容包括醣解作用，檸檬酸循環、電子傳遞鏈、肝糖合成、脂肪及含氮化合物之代謝與合成等項目。

**362027 Biochemistry (2)****3 R****S. C. Sheu,  
M. L. Wu, S**

Students should have the basic concepts of biomolecules before they take this course. This course is designed to introduce the metabolism and anabolism of biomolecules. The topics include glycolysis, citric acid cycle, electron transfer chain, glycogen synthesis,  $\beta$ -oxidation of fatty acid, biosynthesis of lipid, metabolism and anabolism of nitrogen-containing compounds.

**362041 電腦在食品科技之應用****2 選****林貞信，上**

本課程介紹個人電腦與套裝軟體在食品科技上之應用，範圍包含數值資料蒐集整理，品質管制之分析統計，食品加工過程之數學模擬等等。教授內容涵蓋：電腦繪圖，機率與抽樣，統計結果分析檢定，簡單迴歸與複迴歸，營養調配，反應曲面法，食品工程上之應用數值解析。簡介基礎理論，重點則在套裝軟體(SAS、EXCEL)於食品科技各領域之應用實例。

**362041 Application of Computer  
Technology in Food****2 E****J. S. Lin, F**

This course introduces the application of personal computer and assorted softwares in the field of food technology, such as data acquisition, statistical treatment on quality control, mathematical modeling involved in various food processing technologies. Contents include chart and figure generation by computer, probability and sampling, statistical analysis, regression, optimization, response surface method, applied numerical analysis in food engineering. Focus will be emphasized on practical applications of computer software instead of sophisticated theories.

**362042 電腦在食品科技之應用實習****1 選****林貞信，上**

本實習目標配合正課而實施，共設計有食品科學研究暨食品工業生產上所需應用到之 10 項練習題，分別為直方圖製作；管制圖製作；信賴區間；直條圖與 x-y 圖製作；假設檢定之施行；線性迴歸與變異數分析；反應活化能計算；線性規劃應用於營養調配；反應區面法；相關性與相關係數分析。

**362042 Application of Computer  
Technology in Food Lab.****1 E****J. S. Lin, S**

The lab is specifically designed to complement with the lecture, there are totally 10 practices listed as follows: Histogram Chart; Statistical Process Control; Confidence Interval; Bar Chart and X-Y Representation of scientific data; Validation of Hypothesis; Linear regression and Variance Analysis;



Calculation of Activation Energy by Linear Regression; Linear Programming for Nutrition Formulation; Response Surface Methodology; Analyses on the Correlation Coefficient.

### 362039 食品科技英文

2 選

陳與國，下

本課程目的在給予學生食品科技專業英文知識，提升其聽說讀寫能力。課程內容將介紹日常生活常用之食品字彙、食品科學各專業領域之專有名詞、食品科學研究報告之閱讀與撰寫，並利用課堂討論及專題報告，提昇學生食品專業英文的聽說能力。

### 362039 Professional English in Food

2

E Yu-Kuo.Chen , SScience

The purpose of this course is to improve students' listening, speaking, reading and writing abilities of professional English in food science. Several topics will be introduced in this course including living English in food science, terminology of different fields of food science and reading and writing of research paper of food science. Moreover, the students' listening and writing abilities will also be improved by group discussion and oral presentation.

## 二、選修科目 Elective Courses

### 362034 烘焙學

2 選

蔡錦燕，上

本課程以教授各種類烘焙產品之製作原理為主，介紹各項食品組成分在烘培產品中所展現的功能特性。課程內容依產品特性，分麵包、蛋糕與西點三大類。以單項產品之製作為主軸；從麵粉的選擇，配方的計算、麵糰醱酵時間、濕度與溫度之判斷，和烘焙溫度與時間的決定等因素來探討產品的烘焙體積、口感、顏色、外觀及味道等。更希望藉由此項課程之傳授，培養學生對新產品研發的興趣。

### 362034 Baking

2 E

C. Y. Tasi, F

Objectives of this course are to introduce the baking principles and functional characteristics of various bakery products from different food ingredients. The course is divided into three major categories including breads, cakes and disserts. On the basis of sole product preparation, study of baking volume, texture, color and appearance are completely conducted by investigating flour screening, recipe calculation, judgment of dough fermentation temperature, humidity and time, and determination of baking temperature and time. As a result, the current course training should enhance the capability of student for new product development.

### 362035 烘焙學實習

1 選

蔡錦燕，上

本課程之開設在於印證烘焙理論與實際操作之相互關係。讓學生從實習操作中，去瞭解各項食品成份對製成產品品質的影響。實習課程採小組教學與分工，共分成八組，各式麵包、蛋糕及西點共三大類，二十四項產品將列入理論設計中逐項實習反覆演練。

### 362035 Baking Lab.

1 E

C. Y. Tasi, F

This course is provided for illustrating the relationship between baking theories and practices. To make students understand the effect on quality of baking products by knowing various food ingredients. This class is classified as unit teaching and operation, and the attendees are divided into 8 groups for practicing. Selected twelve products focusing will be covered and repeatedly practiced in Lab class.

### 362040 食品添加物

2 選

邱文貴，上

該課程討論食品加工中常用之配料，如修飾澱粉、特殊功能蛋白質、膠質及加工油脂及少量使用但功能特殊之添加物，如香料、乳化劑、抗氧化劑等物理性質及其生產技術。而整合各配料主要食品加工過程中，搭配使用，發揮整體最大功能，則是本課程之討論重點。

## 362040 Food Ingredients

2 E

W. K. Chiu, F

The commonly used ingredients in food processing are discussed, including modified starch, protein with functional properties, gum and gelling material and modified fatty ingredients. The special functional ingredients such as spices, emulsifier, antioxidants are also covered. Pasteurizing and sterilizing equipments, cooling machines, drying machines, extruder, packing machines and some advanced automatic machines in food industry are mentioned too.

### 362046 食品行銷

2 選

吳明昌、  
楊季清 上

本科目為了使學生清楚地瞭解食品行銷的基本概念和原則，進而促使學生熟悉食品交易行為，以培養出具行銷能力之食品科技人員。教學內容包括理論與實物研討兩部分。(一)在食品行銷理論方面將蓋下列範圍：行銷管理程序、策略性規劃、行銷研究、行銷資訊系統、行銷通路、產品促銷、競爭性行銷策略、國際行銷 (二)在實務研討方面：以不同食品企業之行銷方式做為研討對象，教學方式兼採講授，分組討論，專案報告與測驗。

## 362046 Food Marketing

2 E

**M. C. Wu,  
C. C. Yang, F**

The objective of this course was designed to teach food marketing basic concepts and principles. So that student could also specialize in marketing as well as food science and technology .The courses included:(A)marketing management procedure 、strategic planning 、marketing research 、marketing information system 、distribution channels、product promotion、competitive marketing statagy 、international marketing (B)Individual food enterprise marketing.

## 362060 食品生物技術產業與經營

2 選

郭嘉信，上

本課程內容主要介紹國內外食品生物技術產業的現況與發展、新穎保健食品的開發與應用、基因改造食品的過去與未來、台灣食品生技產業的規範與智財權、以及經營策略等。

## 362060 Industrial Business and Management for Food Biotechnology

2 E

J. H. Guo, F

This course will provide an overview of global food biotechnology businesses, critical developments of novel healthy foods and genetically modified foods, regulations and intellectual property protections of food biotechnology businesses, and strategy and management for running a food biotechnology business.

## 362023 食品分析

## 2 必

林頌生、黃卓治、黃至君，上

本課程分二方面討論，其一為基礎分析化學之複習，重點包括各種濃度單位之換算、試藥溶液之配製方法及定性、定量化學反應之原理與計算等；其二為針對食品分析實習項目之實驗原理與計算的講解，俾使學生在操作實驗之餘，能知其然，並融會貫通實驗的設計原理與目的。

## 362023 Food Analysis

 $2 \quad \mathbb{R}$ 

C. S. Lin、T.C.Huang、C.C.Huang, F

Designed to acquaint the students with the basic knowledge and fundamental principles of analytical chemistry commonly used by food analysts. Emphasis is on understanding the theoretical and practical aspects of volumetric and spectro photometric methods. Procedures for routine quality control and official

tests on food components are also introduced.

### 362024 食品分析實驗

2 必 林頌生、黃卓治、  
黃至君，上

實習項目包括食品系之一般成分分析及油脂、蛋白質食品之品管等方面。一般成分包括水分、灰分、粗蛋白、粗脂肪、磷、鈣等成分之定量；油脂之品質測定包括酸價、碘價、過氧化價及皂化價等；蛋白質之鮮度及品質測定則包括揮發性鹽基態氮及胺基態氮等。讓學生藉實際之操作過程，對相關食品之一般成分測定及品管工作有基本的認識。

### 362024 Food Analysis Lab.

2 R C. S. Lin、T.C.Huang、C.C.Huang,  
F

Designed to acquaint the students with the practical operation for routine quality control and official tests used by food analysts. Students work in small groups to be familiar with the proximate analysis of food products. Techniques training of quality control on selected items in fat-containing food (such as acid value, peroxide value, iodine value and saponification value) and protein-containing food ( such as volatile basic nitrogen and amino nitrogen ) is also the objectives of this course.

### 362049 食品品質管制

2 選 廖遠東，上

由統計之觀點，討論食品工廠中之品質管制事項，包括管制圖之製作原理、實際應用建立。管制要點，經由食品良好作業規範，延伸品管項目原料、製程以迄售後品質，注重製造過程中預先管制，並顧及顧客反應以求追縱改進。危害因子管制，則由加工過程中特別重要的管制點著手，以維護產品之安全性。最後，則充分運用統計數據，建立 ISO9000 系列管制制度，達到食品品質之全面品質保證。

### 362049 Food Quality Control

2 E E. T. Liaw, F

From the view point of statistical technique, quality control in food processing is important. Control charts, involving X and R charts will be discussed theoretically. Application of these charts is emphasized. In good manufacturing process, food quality protection will be discussed from raw material, processing and shelf-life. Some of the major steps to maintain food quality should be achieved by applying HACCP system. Finally, use the statistical datas to match ISO9000 control system. So, the food quality will be assured entirely.

### 362022 營養學

2 必 陳與國，下

本課程除講授營養學基本原理和正常營養之實際運用外，更藉由親自操作實習來明瞭食物的特性與營養學上的觀念和理論。主要講授內容包括介紹食物營養與健康，消化吸收與代謝，蛋白質及胺基酸、醣類、脂類、能量代謝、礦物質元素、水分及電解質平衡、脂溶性和水溶性維生素。主要實習內容包括：米飯、麵條、米粉和粉絲類吸水率之計算與製備；蛋之乳化作用及蛋黃醬之製作；肉類之收縮率與廢棄率之計算方法與製備；豆類與奶類的特性及其製品與各類食物代換單位和代換表應用練習。

### 362022 Nutrition

2 R Yu-Kuo.Chen , S

The objective of this course is not only to introduce fundamentals of nutrition science and practical applications of the principles for normal nutrition but also to elucidate properties of different kinds of food and nutrition concepts and theory by practical manipulation. Lecture contents cover: food, nutrition and health; digestion, absorption and metabolism; proteins and amino acids; carbohydrates; lipids; energy metabolism; mineral elements; fluid and electrolyte balance; fat-and water-soluble vitamins. Laboratory work includes: preparation and water absorption ratio of different kinds of rice and noodle; dumpling making; practice of “as purchased” and “edible portion” in eggs, vegetables and fruits; emulsification of egg and predation of mayonnaise; shrinkage ratio and waste ratio of meats; properties of soybean and milk

and their products an practice of exchange list of different kinds of foods.

### 362050 食品殺菌技術

2 選

吳明昌，上

本課程在探討食品品質變化最小的條件下，惰化或殺滅食品中所含微生物而得以商業保存的技術。其內容包括利用熱、電磁波殺菌之原理及應用，放射線殺菌之理論、應用及安全性，化學藥劑之使用方法及安全性，水活性調節、超薄過濾、超高速遠心分離等之物理除菌原理、應用及無菌包裝等加工技術。

### 362050 Food Sterilization

2 E

M. C. Wu, F

The course discusses the techniques to achieve the preservation of food. The food sterilization can be processed under a minimized deterioration condition to reduce or remove the existing microorganism, the outlines included the heat, electromagnetic wave, radiation sterilization, the aseptic packaging and carefully control of water activity, ultrafiltration, ultrapressure, and ultrahigh speed centrifugation are also covered.

### 362051 食品殺菌技術實習

1 選

吳明昌，上

本課程配合食品殺菌技術之課程內容，作實際之操作、試驗或參觀等其內容包括各類食品之熱傳導速率測定、微生物耐熱性曲線製作、加熱殺菌值測定、各種密封食品加熱殺菌條件之探討、化學藥劑對食品之保存與安全性試驗、物理除菌等試驗及至加工廠或相關單位參觀，以瞭解食品生產之殺菌實務。

### 362051 Food Sterilization Lab.

1 E

M. C. Wu, F

The lab is to match the lecture to have the practice to run the food sterilization techniques. The thermal conductivity rate was determined to evaluate the thermal death curve and lethal rate of microorganisms. The chemical and physical sterilization were also tested and setup a field trip for students.

### 362026 食品微生物實驗

1 必

謝寶全、邱秋霞、  
郭嘉信，上

講授食品中微生物數之計測方法，有用食品微生物之分離、培養方法，以及單獨利用細菌、酵母、黴菌或混合菌來製造食品的方法，食物中毒菌之分離鑑定及其計測。

### 362026 Food Microbiology Lab.

1

R P. C. Shieh, C. H. Chiu,  
J. H. Guo, F

The lab technique covers the cell count of microbes in food, the isolation and cultivation of food microbes. Bacteria、yeast、mold or mixed of them were applied on food processing, the isolation, identification and counting of food poisoning microbes were also involved.

### 362057 機能性食品理論與應用

2 選

楊季清、  
謝寶全，下

此課程包含特殊營養食品、機能性食品、計劃性食物及藥劑營養食品之加工、生理功能介紹。由於男人、女人和小孩之特異生理構造不同，因此所需之營養要求也不大相同。而針對老年人所開發之機能性食品強調抗老化之作用及免疫系統之建立。在西方國家植物化學食品包含天然生理活性等物質較普遍化，而中國之藥用植物在未來健康食品市場扮演一重要的角色。此課程將說明這些功能特性食品之物理(身體)的及化學的功能。

### 362057 Functional Foods

2 E

C. C. Yang,



**P. C. Hsieh, S**

The course comprise the physiological function and process of nutritional supplements、functional foods、designers foods and pharma foods. Men women and children are different in nutritional requirements due to their distinct physiological structure. The functional foods for aged people emphasize the effect of anti-aging and building the immune system. Physiochemical which contain natural physiological active ingredients are more popular in western countries. The Chinese herb should play an important role for the future healthy food market. This course will illustrate their physical and chemical functions.

**362036 應用電工學與實習****2 選****陳和賢，上**

本課程目的主要內容為：

基本直流電路的認識、各種量表的認識、過電流裝置、各種電驛之認識。交直流輸配電的介紹、基礎電路設計與認識、歐姆定律及其應用、三用電錶之認識及應用、NFB 之認識與應用、馬達轉速與輸出功率、汽車電路系統、計時繼電器之認識與應用、發電機之認識、基礎供電設計。

**362036 Applied Electric Engineering And Lab 2 E****H. H. Chen, F**

The top of this course:

Fundamental circuits.(D.C & A.C.) Introduced meters: (Amp. Voltage. Ohm. Waft.) Introduced: Fuse & N.F.B. Introduced: Relays (Thermal overload Relay, Time relay etc.) Introduced: Transmission & Distribution, Fundamental circuits, Ohm's law, Use of meters (A.V), Fuse & NFB, Speed & power of a meter, Electrical system of Auto, The use of Rwlays, Generator, Fundametal Design of Transmission & Distribution system.

**362047 保健食材之加工與應用****3 選****蔡碧仁，下**

使學生了解食品材料與保健科學的基本特性及具備在保健科學應用之基礎及技術，並有效掌管保健食材的加工、產品貯存及流通。內容包括：蔬菜、水果、豆類與穀類的基本特性及保健功能、東西方保健食材，如中草藥、菇蕈類、香草類、幾丁聚糖、蜂膠等、生物技術產品，如膠原蛋白、酵素類、.乳酸製品、果寡糖、色素等之介紹、營養補充劑，如維生素、亞麻油酸、DHA、卵磷脂等

**362047 Processing and Application of 3 E****P. J. Tsai, S****Health Materials**

The aim of this course is to introduce the characteristics of food materials and their application in Health Science. Handling skills during processing, storage and transportation are also mentioned. Contents include：characteristics and functions of fruits, vegetables, beans and cereals、Health foods in orient and west word like Chinese medicine, mushroom, herb, chitosan、Biotechnical products like collagen, enzyme, lactic acid, oligosaccharide and pigments. 4. Nutrient supplement like vitamin, linoleic acid, DHA and lecithin.

**362044 食品調理技術****2 選****邱文貴，下**

本課程在指導學生利用食品材料、調配、冷熱處理、脫水、發酵、烘焙等食品調理技術，配合烹飪學原理，將各類食品加以調製、包裝期能增加保存期限。其內容包括蛋白質系、碳水化合物系、油脂系食品汁調理原理及調理法、合理營養及適當色香味與物性的調配、產品品質鑑定、保藏及新產品開發等技術。

**362044 Techniques of Prepared Foods 2 E****W. K. Chiu, S**

The goal of this course is to teach the students the knowledge of raw material, formulation,

dehydration, baking, fermentation in food cooking. It also combines with the packaging technique to extend the shelf-life of foods.

### **362045 食品調理技術實習 1 選 邱文貴，下**

本課程配合食品調理技術之理論,習作各類食品,並以食品保存技術製成即食調理食品。其內容包括穀類、根莖類之碳水化合物食品,魚、肉、乳、蛋及豆類之蛋白質性食品、高油食品等之調配技術過程中之調理化學變化測定、包裝材料、包裝方法及保存性測驗、產品品質測定、調味醬類之配合與習作、調理食品研發等。

### **362045 Techniques of Prepared Foods 1 E W. K. Chiu, S Lab.**

The course covers the theoretical aspect of the techniques of food preparation. Several kinds of prepared foods are formulated. Preservation and Preparation of the ready-to-eat food are practiced.

### **362048 食品加工自動化元件與實習(1) 3 選 陳和賢，下**

簡介食品工業上所應用之各種自動控制系統及其組成元件。課程包含自動控制系統之組成元件分類概述,順序與回饋控制簡述,各種電力與氣壓感測控制元件介紹,各項系統元件之工作原理,以及簡易控制程式之編輯驅動。實習內容包括電氣與氣壓元件,交直流馬達,感測器,以及可程式化邏輯控制器(PLC)等模組化之教學實習套件。本課程為「機電整合與自動化」系列課程之基礎,目標是以生動之實習操作,來使學生瞭解控制系統之組成與功用。

### **362048 Element of Food Processing 3 E H. H. Chen, S Automation and Lab. (I)**

This course is designed to introduce the control systems and components applied in the automatic manufacturing processes. Topics covered are: characteristics of elements for automatic process control; sequential and feedback controls; introduction of electrical, pneumatic control elements and their operation principles; and basic programming techniques. Contents of the laboratories are: integrated systems such as electrically- and pneumatically-driven elements; DC and AC motors; sensor devices, and programmable logic controllers (PLC). This course aims to lay the foundation for a series of courses related to “process control and automation” through the innovative hand-on experiences.

### **362053 物理化學 3 選 劉展岡，上**

本課程之教學目標為教授基礎物理化學原理與實驗方法。課程內容涵蓋：物質三態定義與變化；熱力學第一、二、三定律涵義與應用；反映熱化學與化學平衡；自由能與平衡常數；化學勢與自由能；物理性平衡與相律；溶液蒸氣壓、沸點、凝固點與滲透壓；界面化學序論；化學動力學概述。

### **362053 Physical Chemistry 3 E C. C. Liu, F**

The course is to offer the fundamental theories and experimental methods in the category of physical chemistry. Topics cover: States and changes of pure compounds; The first, second, and third laws of thermodynamics and their applications; Thermo-chemistry and chemical equilibrium; Free energy and equilibrium constant; Chemical potential and free energy; Physical equilibrium and phase rule; Vapor pressure, boiling temperature, condensing temperature, and osmotic pressure of solutions; Introduction to interfacial chemistry; Brief on chemical kinetics.

### **362055 微生物檢驗技術 2 選 郭嘉信、邱秋霞，下**



本課程內容包括：

重要的食品微生物。微生物的物質代謝。應用微生物的工業，包括微生物的代謝生產物、微生物的酵素、生產、菌體的利用。微生物的特殊利用。食品儲存與敗壞之原理。各種不同食物之污染。食品衛生。

### 262055 Microbes Detection

2 E

J. H. Guo,  
C. H. Chiu, S

This course is offered to cover:

Important microorganisms in food microbiology. Substance metabolism for microorganisms. Applied microbiology: production of culture for food fermentations. Foods and enzymes for microorganisms. Special utilization for microorganisms. Principles of food preservation and spoilage. Contamination and spoilage of different kinds of foods. Food sanitation and control.

### 362056 微生物檢驗技術實習

1 選

郭嘉信、  
邱秋霞，下

本課程內容包括：

總生菌數的測定。大腸桿菌群、大腸桿菌的測定。黴菌及酵母菌數之檢驗。包裝飲用水中微生物之檢驗法—糞便性鏈球菌之檢驗、綠膿桿菌之檢驗。鮮肉之抗生物質殘留檢驗法。乳品檢驗法—細菌之檢驗、次甲藍還原試驗。生乳中抗生物質殘留檢驗法

### 362056 Microbes Detection Lab.

1 E

J. H. Guo,  
C. H. Chiu, S

This course is offered to cover:

Methods of tests for food microbiology—test of standard plate count. Test for coliform bacteria and *Escherichia coli*. Methods of test for Food Microbiology—Test of mold and yeast count. Method of test for Microbiology in Bottled Water—Test of *fecal streptococci*, Test of *Pseudomonas aeruginosa*. Method of test for Residual Antibiotic substances in Fresh Meat. Methods of test for Milk and Milk products: Test of bacteria, methylene blue reduction test..Method of test for the Residual Antibiotic Substances in Raw milk.

### 362029 食品化學

3 必

廖遠東，下

本課程介紹基礎食品化學概論，設計給主修食品專長學生並可提供基本知識去克服食品工業上的技術問題，課程內容涵蓋水分、醣類、蛋白質與脂肪等四大基本營養素。並且將食品化學的理論與食品加工結合，著重在加工和貯藏上的變化，並應用於食品成分對品質促進的影響。

### 362029 Food Chemistry

3 R

E. T. Liaw, S

The course is designed for students who are majoring in food science. It provides basic knowledge to overcome technical problems occurred in food industry. Topics include water in foods, carbohydrates, proteins and amino acids, lipids and fatty acids. Basic chemical and functional properties are emphasized in the changes during postharvest and food processing, and the application of food ingredients as quality improvement.

### 362071 食物學原理

2 選

蔡錦燕、下

此課程介紹食物材料的特性，包括糖、澱粉、蔬菜、肉、蛋、豆類、乳品及油脂，並比較食物材料在烹製過程中發生的變化。內容包括：糖的褐變，澱粉的糊化，蛋的起泡力、乳化力，油溫與炸物質地的關係....等等。

**362071 Principles of Food****2 E****C. Y. Tasi, S**

This course will introduce the basic properties of food ingredients and the chemical, physical change at the process of preparation. The aim of this course is to provide students with the ability to compare the change of food ingredients, that includes of the browning of sugar, gelatinization of starch, beating foam and emulsification of egg, fat/oil heating and deepfryings etc.

**362058 食品冷凍學****3 選****楊季清，下**

課程包括介紹冷凍物理現象原理及冷凍食品的保鮮技術，課程包含 1.冷凍的機械原理 2.莫利爾線的製做與操作實務 3.冷凍循環原理 4.冷凍品的品質保鮮原理及技術 5.冷凍食品包裝

**362058 Freezing of Food****3 E****C. C. Yang, S**

The class including introducing basic physical phenomena in the freezing and freezing technology. The content of this course contain: 1 mechanism of freezing 2.Mollier chart application and drawing.3Theory of freezing cycle. 4. quality of freezing foods control and freezing time calculation.5.packaging of frozen foods.

**362065 食品工廠管理****2 選****林貞信，上**

本課程在介紹食品工廠的生產規劃與作業管理、工廠內的新產品研究發展、自主的管理系統(HACCP、ISO、GMP、CAS、GHP 等)、工廠的安全與衛生、風險管理與危機應變、中央廚房介紹與其管理等。

**362065 Management of food factory****2 E****J. S. Lin, F**

In this course, the following subjects in a food factory will be introduced: Production Planning and Operation Management, R & D of new products, Autonomous Management System (HACCP、ISO、GMP、CAS、GHP), Safety and Sanitation, Risk Management and Crisis Handling, and Introduction to Central Kitchen and Its Management.

**362062 酵素應用技術****2 選****許祥純，上**

本課程主要分為三大部分：第一部份是敘述有關酵素學的基本概念，如：分類、構造、功能及活性調控，第二部份是強調有關酵素研究之技術，包括酵素活性分析、純化及特性之研究，最後是介紹各種使用於不同食品工業之酵素特性及其用途。

**362062 Enzyme Methodology****2 E****S. C. Sheu, F**

Three sections are included in this course. The first section is to introduce the basic concepts of enzymology, such as: classification, structure, function and regulation. In the second section, it contains methods of enzyme quantitation, purification and characterization. The final section is to introduce the characteristics and application of enzymes used in the different fields of food industry.

**362063 酵素應用技術實習****1 選****許祥純，上**

本課程提供學生有關酵素操作之基本技術，並進而研究食品酵素之特性。其實習內容包括酵素濃度及活性之測定、酵素萃取及純化方法、色層分析法、電泳、分子量之決定，PH 值與溫度對酵素活性之影響及酵素固定化技術等項目。

**362063 Enzyme Methodology Lab.****1 E****S. C. Sheu, F**

This course is intended to provide students with the basic techniques of enzyme operation and characterization of some enzymes used in food industry. It includes analysis of enzyme activity, chromatography methods, electrophoresis, molecular weight determination, characterization of enzyme and application of enzyme immobilization.

**362064 食品包裝****2 選****吳明昌，上**

本課程著重於訓練學生瞭解各種不同食品該用何種包裝材料方能保護食品;另外訓練食品包裝設計,針對消費者之需要,而設計出各種商品的包裝。因為消費者到市場上購買食品,已經從以前生理上的需要演變成心理上的需求。因此今日食品包裝在食品之銷售上佔了很重要的地位。食品包裝技術講授內容包括:各類食品之包裝材質、食品包裝之管理、最新食品包裝設計以及某些特殊功能食品在特殊用途上之包裝發展、貯存、市場。

**362064 Food Packaging****2 E****M. C. Wu, F**

The course is designed to train students to understand "the packaging needs of foods "and the package design . Contents of the course includes packaging material of food; the packaging needs of foods ,the restriction of food packaging, the new food package design and aspects of packaging technology that are relevant to the preservation, distribution and marketing of a specific food.

**362059 分子生物概論****3 選****吳美莉，上**

本課程主要是提供學生有關分子生物學的基本知識及最新的訊息。其內容包括三大部分:首先是簡介組成細胞之主要分子的構造及其功能。第二部分是討論原核及真核基因構造、功能及表現。最後是介紹有關研究分子生物的現代技術。

**362059 Introduction to Molecular Biology****3 E****M. L. Wu, F**

This course provides the students with the basic knowledge and gives them the newest information which surrounds molecular biology. It is divided three parts. Part I outlines the structure and function of molecules that make up all cells. Part II discuss the structure, function and expression of both prokaryotic and eukaryotic genes. Part III focuses on modern techniques for molecular biology.

**362066 新產品開發與實習****3 選****楊季清，上**

本課程主要介紹開發新產品之步驟與方法。結合基本的食品化學、微生物和加工技術於新產品開發。課程並介紹如何應用電腦去設計食品配方。學生必須能夠把以往所學的知識結合與應用於新產品開發。

**362066 Food Product Development and Lab.****3 E****C. C. Yang, F**

The objectives of this course included procedure new product development and the approach to achieve the R&D. the use of food chemistry, microbiology and food processing techniques were combined with the computer formulation methods to formulate new products.

**362031 食品衛生與安全****2 必****郭嘉信，上**

講授食品從生產原料，經加工過程、包裝，直到人類攝食為止之各階段過程中，確保人類食生活上之衛生與安全的問題；食品與微生物、食品之腐敗、食物中毒、食品添加物，經口傳染病、人畜共通傳染病、食品與寄生蟲、食品之放射線能污染、食品衛生上之對策以及食品法規等。

**362031 Food Hygiene and Safety****2 R****J. H. Guo, F**

Food hygiene and safety is to teach the means necessary for ensuring the hygiene and safety of human being , the food at all stages from its growth, products or processing, packaging, until its final consumption. It contains food and microorganisms, food deterioration, food poisoning, food additives, oral infection, zoonosis, food and parasite, food and sanitary insects, contamination of radiation substance, the measurement of food hygiene and the laws and regulations of food.

**362038 食品機械****2 選****陳和賢，上**

本課程將介紹食品與相關機械之原理與應用。課程內容包括工廠電力系統，工程圖學，機械原理，電動機械，量測與控制，流體機械，加熱機具，殺菌機具，冷凍機具，乾燥機械，擠壓機，包裝機械 及其他食品自動化機械。

**362038 Food Machinery****2 E****H. H. Chen, F**

Objectives of this course are to introduce the principles and applications of food machinery. Scope of this course includes factory electricity, engineering drawing, the principles of machinery, electrical machines, measurement and control, fluid machinery, heating equipments, pasteurization and sterilization equipments, freezing equipments, dehydration equipments, extruders, packaging systems and other food process automotive machinery.

**362069 醱酵學****2 選****謝寶全、  
邱秋霞，上**

講授以應用微生物的醱酵技術製造各種發酵產品之生產技術，如酒類工業、有機酸工業、發酵食品工業、胺基酸工業、酵素工業、菌體生產工業、抗生物質工業、核酸相關物質工業、微生物轉換醱酵工業、生理活性物質生產工業等，以及利用微生物之醱酵技術於培養植物細胞生產有用物質與生產細胞的方法。

**362069 Fermentation****2 E****P. C. Hsieh,  
C. H. Chiu, F**

The course based on the knowledge of applied microbiology to discuss the related fermentation industry: brewing, organic acids, food fermentation, amino acids, enzymes, antibiotic, etc. The course also covered the technique of cell production.

**362070 醱酵學實習****1 選****邱秋霞，上**

使學生練習生產單細胞蛋白質之培養技術、酒精醱酵技術、有機酸醱酵技術、胺基酸醱酵技術、酵素生產醱酵技術、抗生物質生產技術、醱酵食品製造之技術以及培養植物細胞生產有用物質與大量生產有用細胞之培養技術等。

**362070 Fermentation Lab.****1 E****C. H. Chiu, F**

The lab covers the single cell protein, technique in alcohol fermentation、amino acids、enzymes、antibiotics production and food fermentation, and the cell production technique.

**362067 感官品評學與實習****3 選****林頌生，上**

以實用方式，配合理論的資料，輔以實物品評方式，來介紹何謂感官品評。針對學生將來在工業界或研究單位的需求，教授感官品評的基本生理、實驗環境的要求條件，樣品取樣及準備等硬體教育，再從軟體方面之人員選擇及訓練以及數據的收集及分析逐步加強。針對影響感官測驗精確度的因素加以說明，再進一步的實際操演各類型的感官測驗，包括差異選別試驗(Difference Test)，特性敘述試驗(Descriptive analysis)及嗜好性測驗(Preference Test)等。並以品評組長訓練方式分組實作品評實驗，包括實驗設計、預備工作數據收集、統計分析與研判。

**362067 Sensory Evaluation and Lab.****3 E****C. S. Lin, F**

Students are separated into several discussion panel groups. Tasting and discussions of primary source materials according sensory evaluation methods, including historical perspectives, psychophysics, perceptual biases, sensory environment. Concepts influencing detection of sensory differences, use of rating scales, and characterization of sensory properties will also be emphasized. Further studies include



sensory techniques and statistical methods for analyzing results in order to establish a full sensory evaluation program.

### 362071 食品工程學(2)

3 選 林貞信，下

食品工程為介紹學生食品生產製造過程中所涉及和相關的工程概念和理論。課程內容包括數學理論與應用、單位與因次、物質平衡、能量平衡、蒸汽表、黏度概念與流變學、流體的輸送、基礎熱傳學、溼度學和食品熱處理等。

### 362071 Food Engineering(2)

3 E J. S. Lin, S

Objectives of this course are to introduce the concepts and principles of chemical engineering involved in the food manufacturing processes. Contents of this course include a review of mathematical principles and the applications in food engineering, units and dimensions, material and energy balances, steam and steam tables, viscosity and rheology, transport of fluids, basic heat transfer, psychrometry, and heat treatments of foods.

### 362075 食品儀器分析

2 選

余旭勝，下

本課程主要是討論有關食品分析所使用儀器之基本原理及功能。重點著重在了解儀器之結構、分析原理及應用範疇。討論之儀器包括光度計及層析儀二大類，其中光度計包括紫外--可見光光度計、螢光光度計及原子吸收光譜儀等；層析儀包括薄層色層分析儀、氣相層析儀及高效率液相層析儀等。

### 362075 Instrumental Analysis of Foods 2 E

H. S. Yu, S

Designed to acquaint the students with the basic knowledge and fundamental principles of analytical instruments commonly used by food analysts. Emphasis is on understanding the theoretical and practical aspects of spectroscopy (UV Visible, fluorescence, and atomic absorption spectrophotometer) and chromatography (TLC, GC, and HPLC).

### 362076 食品儀器分析實習

1 選

余旭勝，下

本實習課程提供親自操作有關食品分析領域裡，慣常使用之精密儀器，訓練重點著重在對儀器之實際了解，操作使用及維護等方面。學生將以小組方式，分組練習有關食品成分之分析及鑑定，所使用之儀器包括紫外--可見光光度計、螢光光度計、原子吸收光譜儀、氣相層析儀及高效率液相層析儀等。

### 362076 Instrumental Analysis of Foods 1 E

H. S. Yu, S

#### Lab.

Designed to introduce the students with the practical operation of analytical instruments used by food analysts. Students work in small groups to be familiar with the application of spectrophotometers (such as UV-Visible, fluorescence, and atomic absorption spectrophotometer). Operation of GC and HPLC on the components analysis of food products.

### 362073 食品生鮮處理技術

2 選

蔡碧仁，下

本課程在探討生鮮食品市場之食品處理技術，其內容包括新鮮魚肉之性質、品質保持處理包裝及衛生安全；蔬果採收後之熟成老化、呼吸率之控制，寒害及腐敗之避免；以及生鮮食品進入市場前之處理、包裝、冷處理等鮮度保持法。

### 362073 Post-harvest Technology

2 E

P. J. Tsai, S

The course is designed to discuss the skill of treatment needed in the fresh food supply market including appropriate postharvest treatments, packaging and cold storage prior to the market. The subjects include the postharvest physiology of fruits and vegetables, control of respiration, chilling injury and decay through temperature, humidity, gas atmosphere storage, irradiation and edible film technology. The characteristics of fresh meat, seafood and milk are also covered besides quality maintenance, package and sanitation.

**362074 食品生鮮處理技術實習**                      1      選                      蔡碧仁，下

本課程配合食品生鮮處理之課程來操作試驗，使學生能深入瞭解處理技術。其內容包括蔬果採收後之處理方法，如保鮮環境（溫度、濕度、氣體組成等）之條件；魚肉類鮮度判斷，影響熟成、自體分解、腐敗速率之因素試驗；生鮮材料之清淨、處理、調理包裝及貯存等實習。

**362074 Post-harvest Technology Lab.**                      1      E                      P. J. Tsai, S

The course is designed to match the lecture of “Postharvest Technology” and make students understand the typical technique required in cleaning, package, storage and quality analysis. The skills included the postharvest treatment of fruits and vegetable (proper handling such as storage temperature, humidity, gas environment and edible film) and quality analysis; practices on the test of the freshness of meat, fish and milk. Factors influencing self-decomposition and decay of fish and meat etc. are also covered.

**362072 食品生物化學**    2      選                      許祥純、  
吳美莉      下

本課程在銜接生物化學之課程，提供修讀食品科學學生各類不同食物在加工前後及貯藏間生物化學變化的知識。課程內容包括肉類、魚類、蔬果、穀類、烘焙產品、乳製品等原料物質的變化。

**362072 Food Biochemistry**    2      E                      S. C. Sheu,  
M. L. Wu, S

In order to connect biochemistry course for food science students, this course is to provide knowledge of biochemical reaction usually occurring in various foods. The course contents include the biochemical changes of raw meat, fish, vegetables and fruits, cereal, baking and dairy products before and after processing or during storage.



傳閱附件 2-3—105 學年度二技學生入學適用課程規劃案-植物醫系

## 二年制植物醫學系(105 學年度課程規劃草案)

## (一)教育目標

1. 培養植物醫學學生具備植物預防醫學之專業。
2. 透過實習及實務訓練形塑學生獨立思考、職場倫理及高尚品格特質。
3. 培育植物醫師。

## (二)校定共同必修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
通識課程 General Education	4	2	2			
二技國文 Two-Year Program Chinese	2		2			國文(閱讀與寫作)(2) 抵修
二技英文 Freshman English	2		2			大一英文(2)抵修
英語聽講練習 103 English Listening & Speaking Practice 103	1	1				
英語聽講練習 104 English Listening & Speaking Practice 104	1		1			
生活服務教育 Student Life Service Education	0	0	0			
通識教育講座 Lectures on General Education	1	1				
合 計	11	4	7			

## (三)專業必修科目

中 文 科 目 名 稱  英	學 分 數	第一學年		第二學年		備  註
		上	下	上	下	
普通化學(1) General Chemistry (1)	3	3				
普通化學實驗(1) General Chemistry Lab. (1)	1	1				
普通昆蟲學 General Entomology	2	2				
普通昆蟲學實習 Practice of General Entomology	1	1				
昆蟲生態學 Insect Ecology	2	2				
昆蟲生態學實習 Practice of Insect Ecology	1	1				
植物線蟲學 Plant Nematology	2	2				
植物線蟲學實習 Practice of Plant Nematology	1	1				
植物病原真菌學 Phytopathogenic Fungi	2	2				
植物病原真菌學實習 Practice of Phytopathogenic Fungi	1	1				
生物統計 Biometry	2		2			
生物統計實習 Practice of Biometry	1		1			
植物病原細菌學 Phytopathogenic Bacteriology	2		2			
植物病原細菌學實習 Practice of Phytopathogenic Bacteriology	1		1			
昆蟲分類學 Insect Taxonomy	2		2			
昆蟲分類學實習 Practice of Insect Taxonomy	1		1			
植物病毒學 Plant Virology	2		2			
植物病毒學實習 Practice of Plant Virology	1		1			
農業昆蟲學(1) Agricultural Entomology (1)	2			2		

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
農業昆蟲學實習(1) Practice of Agricultural Entomology (1)	1			1		
植物病理學(1) Plant Pathology (1)	2			2		
植物病理學實習(1) Practice of Plant Pathology (1)	1			1		
農業藥劑學 Pesticide	2			2		
農業藥劑學實習 Practice of Pesticide	1			1		
雜草管理 Weed Management	2			2		
雜草管理實習 Practice of Weed Management	1			1		
植物病理學(2) Plant Pathology (2)	2				2	
植物病理學實習(2) Practice of Plant Pathology (2)	1				1	
農業昆蟲學(2) Agricultural Entomology (2)	2				2	
農業昆蟲學實習(2) Practice of Agricultural Entomology (2)	1				1	
植物非生物性病害 Abiotic Disorders of Plant	2				2	
螨蟬學 Acarology	2				2	
螨蟬學實習 Practice of Acarology	1				1	
合 計	51	16	12	12	11	

## (四)專業選修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
微生物學 Microbiology	2	2				
微生物學實習 Practice of Microbiology	1	1				
植物組織培養技術 Plant Tissue Culture Techniques	2	2				
植物組織培養技術實習 Practice of Plant Tissue Culture Techniques	1	1				
有害動物 Noxious Animals	2	2				
農企業管理 Agribusiness Management	2	2				
有機農業概論 General Discussion of Organic Farming	2	2				
昆蟲生理學 Insect Physiology	2	2				
植物學 Botany	2	2				
植物學實習 Practice of Botany	1	1				
園藝學 Horticultural Science	2		2			
園藝學實習 Practice of Horticultural Science	1		1			
植物分類學 Plant Taxonomy	2		2			
植物分類學實習 Practice of Plant Taxonomy	1		1			
生態學 Ecology	2		2			
資源昆蟲 Insects Resources	2		2			
農業氣象學 Agricultural Meteorology	2		2			
遺傳學 Genetics	2		2			
菇蕈栽培技術 Edible Fungi Cultivation	2		2			

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
植物生理學 Plant Physiology	2		2			
植物害蟲研究法實習 Experimental Methods of Entomology	1		1			
植物病理學研究法實習 Experimental Methods of Plant Medicine	1		1			
昆蟲形態學 Insect Morphology	2			2		
熱帶植物蟲害 Insect Pests of Tropical Plants	2			2		
熱帶植物病害 Diseases of Tropical Plants	2			2		
設施作物蟲害管理 Management of Insect Pests under Structures	2			2		
設施作物病害管理 Management of Crop Disease under Structures	2			2		
植物流行病學 Plant Disease Epidemiology	2			2		
蟲害發生預測預報 Monitoring and Forecasting of Insect Pests	2			2		
昆蟲系統學原理 Principle of Systematic Entomology	2			2		
樹木病害學 Dendropathology	2			2		
樹木蟲害學 Insect Pests of Dendrology	2			2		
昆蟲病理學 Insect Pathology	2			2		
植物蟲害診療實習 Practice of Diagnosis and Management of Insect pests	1			1		
生物化學 Biochemistry	2			2		
生物化學實驗 Biochemistry Lab.	1			1		
生物技術與植物醫學 Biotechnology and Plant Medicine	2				2	

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
植保法規及檢疫 Plant Quarantine and Regulations	2				2	
生物防治 Biological Control	2				2	
有機農業病蟲害管理 Pests Management of Organic Farming	2				2	
居家害蟲 Domestic Pests	2				2	
合 計	73	17	20	26	10	



# 植物醫學系

Department of Plant Protection

## 一、專業必修科目 Required Courses

### 普通化學(1) 3 必

本課程開設之目標為訓練學生使熟悉各種化學之基本操作，並驗證各有關之化學原理。其內容為：1.安全及環保教育講習。2. 混何物分離。3.密度測量。4. 質量守恆定律。5. 化學式的測定。6. 固體中水分測量。7. 定組成定律。8. 氧化還原反應。9. 溶液的配製。10. 氧化還原滴定。11.化學平衡。12.一酸及鹼之 pH 值測定。13.酸鹼滴定。14. 滴定曲線繪製。

### General Chemistry (1) 3R

This course provides students a profound understanding of subject-matter from laboratory work and familiarity with basic laboratory technique. The outlines are as below: 1. Basic laboratory rules and safety. 2. Separation of mixtures. 3. Determination of density. 4. Law of conservation of mass. 5. Determination of empirical formula. 6. Determination of water content in solid. 7. Law of definite composition. 8. Oxidation-Reduction reactions. 9. Solution preparation. 10. Oxidation-Reduction titration. 11. Chemical equilibria. 12. Determination of pH. 13. Acid-Base titration. 14. Titration curve.

### 普通化學實驗(1) 1 必

本課程開設之目標為訓練學生使熟悉各種化學之基本操作，並驗證各有關之化學原理。其內容為：1.安全及環保教育講習。2. 混何物分離。3.密度測量。4. 質量守恆定律。5. 化學式的測定。6. 固體中水分測量。7. 定組成定律。8. 氧化還原反應。9. 溶液的配製。10. 氧化還原滴定。11.化學平衡。12.一酸及鹼之 pH 值測定。13.酸鹼滴定。14. 滴定曲線繪製。

### General Chemistry Lab. (1) 1R

This course provides students a profound understanding of subject-matter from laboratory work and familiarity with basic laboratory technique. The outlines are as below: 1. Basic laboratory rules and safety. 2. Separation of mixtures. 3. Determination of density. 4. Law of conservation of mass. 5. Determination of empirical formula. 6. Determination of water content in solid. 7. Law of definite composition. 8. Oxidation-Reduction reactions. 9. Solution preparation. 10. Oxidation-Reduction titration. 11. Chemical equilibria. 12. Determination of pH. 13. Acid-Base titration. 14. Titration curve.

### 272001 普通昆蟲學 2 必 張萃嫻、上

本課程主要介紹昆蟲學的基本知識，課程內容包括昆蟲形態、分類、生理及行為使學生能瞭解昆蟲及其與人類之關係；以提供從事昆蟲相關訓練之基本概念。

### 272001 General Entomology 2 R T. Y. Chang, F

The objective of this course is to introduce basic knowledge of entomology. Lectures include

morphology, physiology, systematics, development and behavior of insects. Students will get practical experience in identifying and managing insects for their professional careers.

**272002 普通昆蟲學實習 1 必 張萃嫻、上**

本課程主要介紹昆蟲採集及標本製作方法，由實物觀察瞭解昆蟲外部形態，內部構造，種類及行為等。

**272002 Practice of General Entomology 1 R T. Y. Chang, F**

The objective of this lab is to introduce the collection and preservation of insects. Learning external and internal structures of insects through examining fresh and preserved specimens. Using taxonomic keys to proficiently identify insects to the family level.

**272013 昆蟲生態學 2 必 張念台、上**

本課程以生態學原理為基礎，針對影響昆蟲分布、豐度、生命史與演化的生物及非生物環境與昆蟲之交互作用，進行解說。本課程尤其強調昆蟲族群的消長、調節、及昆蟲於生態系能量流動中所扮的角色。

**272013 Insect Ecology 2 R N. T. Chang, F**

This course is basing on the ecological principles and aimed at the interaction of insects with their biotic and/or abiotic environment as it influences their distribution, abundance, life history and evolution. The emphasis will be on population dynamics, regulations and the role of insects playing in energy flow of an ecosystem.

**272014 昆蟲生態學實習 1 必 張念台、上**

本課程配合生態學之正課課程實際操作，以提供同學瞭解昆蟲生態相關之實驗如何進行，因此，本課程主要含有如何進行觀察昆蟲的生物學特性，此可由室內及野外田間之實際觀察，透過氣候、土壤、生物因子及人為方式操作，觀察昆蟲對這些環境因子之反應。並由生物學的基礎介紹如何進行有關昆蟲族群的研究，包括昆蟲族群田間結構、分布、與變動等，並結合物理氣象資料教授族群消長的因素分析。更以室內與人為控制之族群來分析生命表以及探討昆蟲族群發育、生長、衰退等現象。

**272014 Practice of Insect Ecology 1 R N. T. Chang, F**

This laboratory course emphasizes on the technical training of studying insect ecology. It includes the methods and design of experiments, data collection and analysis on insect biology and behavior under both laboratory and field conditions. Students will learn to solve the problems in ecological related topics of insects, such as environmental factors, structure of population, population growth and dynamics as well as life tables.

**272017 植物線蟲學 2 必 鄭光哲、上**

植物寄生性線蟲分類上屬於原形動物門，具假體腔，體形呈二側對稱，具有消化，生

殖、神經系統，缺乏呼吸及循環系統。此類線蟲大多存活於土壤中，以寄主植物根圈附近族群密度較高，行絕對寄生危害植株根部，主要靠水流、土壤、介質、種苗及器具等傳播；少部分線蟲可危害植株地上部，並藉由種子或特定昆蟲媒介傳播。線蟲除可單獨危害寄主植物，尚可與其他病原微生物形成複合感染，造成更嚴重之經濟損失。

## 2

## R

**F**

Plant parasitic nematodes are long tubular organisms that move over wet surfaces and feed on living plant cells. Most species found in soil are very small, about 0.2-2mm long and less 0.05mm wide should be observed by microscopes. Nematodes have digestive, reproductive and nervous systems, but no respiratory and circulatory systems. They parasite and inhabit all parts of plants, including buds, stems, leaves and roots, usually cause severe economic losses.

1

必

鄭光哲、上

本課程即針對植物寄生性線蟲，了解其在病害中所扮演的角色，期建立植物線蟲學之正確觀念。本課程內容包括線蟲之簡介、形態及解剖、鑑定及分類、行為、生態、病害發生、線蟲與寄主、其他病原微生物之關係及防治等。實習內容則包含線蟲之分離、培養、染色、觀察與鑑定、田間採樣、診斷及溫室接種實驗等方法。

1

## R

K. C. Cheng, F

Purposes of this course are to understand damages caused by nematodes diseases, interactions between nematodes and host plants and the future perspectives. Contents include introduction, morphology and anatomy, identification and taxonomy, behavior, ecology, diseases of plants, disease complexes and control. In the practice courses, sampling, separation, culturing, staining, observation and disease diagnosis of nematodes will be concluded.

## 2

必

陳麗鈴

本課程乃以真菌類緣為主幹，分別描述下列真菌—(1) 黏菌綱 (2) 根瘤菌綱(3) 結合菌綱 (4) 卵菌綱 (5) 子囊菌綱 (6) 擔子菌綱 (7) 不完全菌綱的形態、生理、生殖、遺傳、分類、生態及其在農業、醫學及工業上的應用及影響。

2

## R

## R

The course is to introduce the morphology, physiology, propagation, genetics, ecology, classification and the importance of each group of the fungi, which include : (1) Myxomycetes (2) Plasmodiophoromycetes (3) Zygomycetes (4) Oomycetes (5) Ascomycetes (6) Basidiomycetes and (7) Duteromycetes.

## 1

必

陳麗鈺

真菌學實習主要是觀察真菌的形態、特性及其培養、保存的方法，其內容如下：(1) 真菌菌絲體的觀察 (2) 真菌的有性及無性世代孢子 (3) 卵菌綱、結合菌綱、子囊菌綱、擔

子菌綱及不完菌菌綱真菌的形態及特性 (4) 真菌的分離方法 (5) 真菌的培養特性 (6) 真菌菌株的保存方法。

### **272011 Practice of Phytopathogenic Fungi 1 R**

The purpose of this course is in observing the morphology and the characteristics of fungi, studying the culture and the preservation methods of fungus cultivars. The contents are as follows : (1) the hyphae of fungi (2) the sexual and asexual reproduction of fungi (3) the morphology and the characteristics of Oomycetes 、 Zygomycetes Ascomycetes 、 Basidiomycetes and Duteromycetes (4) the isolation of fungi (5) the culture of fungi (6) the preservation of fungi.

### **生物統計 2 必**

本課程內容包括數據資料之特性及整理方式，並介紹敘述統計，各種分布(包括常態、二項式、多項式、卜瓦松、t、卡方與 F-等分布)，信賴區間應用，各分布之測試與應用，變方分析，迴歸與相關。

### **Biometry 2 R**

The course first introduces data characteristics and management methods. Other main topics include the descriptive statistics, different distributions such as normal, binomial, polynomial, Poisson, t-, chi-square, and F-distribution, confidence limits applications, tests and applications of all distributions, analysis of variance, as well as regression and correlation analysis.

### **生物統計實習 1 必**

本實習依上課進度進行對數據整理，敘述統計及各項分布（常態，二項式，多項式，卜瓦松，t，X，F 分布）信賴區間，以生物數據實例進行練習。變方分析應用，迴歸及相關利用。

### **Practice of Biometry 2 R**

The lab. proceeds with the lecture of biostatistics, major focus will be on exercises of biological data management descriptive statistics and all distributions (Normal, binomial, polynomial, Poisson, t, X, and F). Application on confidence limits tests between population of different distribution analysis of variance, regression and correlations .

### **272007 植物病原細菌學 2 必 林宜賢、下**

本課程主要在講授植物病原細菌的分類與鑑定，以及描述其所引起的病害種類.內容包括植物細菌性病害的基本診斷技術、病原細菌主要屬的區分方法、致病機制、病原細菌的遺傳與突變、噬菌體與細菌素、血清學及它們在植物病原細菌學上的應用、植物病原細菌的生態及植物細菌性病害的管理及防治、使學生在修完本課程後對植物病原細菌及其所引起的病害有更多的瞭解與認知。

### **272007 Phytopathogenic Bacteriology 2 R**

The objective of this course is to introduce the taxonomy and identification of plant pathogenic bacteria and the descriptions of the diseases they cause. Contents include the basic techniques for diagnosing plant bacterial diseases, differentiation of the major genera of plant pathogenic bacteria, mechanisms of diseases induction, variation and genetics of plant pathogenic bacteria, bacteriophages and bacteriocin, serology and their application on phytopathogenic bacteria, ecology of phytopathogenic bacteria and control or management of bacterial plant diseases. The students will learn more knowledge about the phytopathogenic bacteria and the diseases they cause from this course.

**272008 植物病原細菌學實習 1 必 林宜賢**

本課程主要在訓練並建立學生在植物病原細菌學領域之基本基礎與技術，課程內容包括、植物病原細菌之分離與培養、接種與鑑定，細菌病害的診斷技術，植物病原細菌之形態、生理生化特性測試及相關技術之應用。

**272008 Practice of Phytopathogenic Bacteriology 1 R**

The purposes of this course are critically selected and tested to instruct students effectively in the basic principles and techniques within phytopathogenic bacteriological areas. Course contents include the isolation, identification, inoculation, and diagnosis techniques of phytopathogenic bacteria, the morphology and physiological and biochemical tests of phytopathogenic bacteria, and related techniques application.

**272023 昆蟲分類學 2 必 張萃嫻、下**

本課程主要介紹昆蟲綱各目的分類特徵及分類系統；課程內容包括昆蟲分類學之發展史、分類階層、昆蟲命名、昆蟲鑑定、特徵描述、模式標本、32 目各目之外表形態構造及其診斷鑑定特徵、分類系統及分類學說等。

**272023 Insect Taxonomy 2 R T.Y.Chang, S**

The objective of this course is to introduce taxonomic characters and phylogeny during each orders of Class Insecta. Lectures include the history, catalogue, nomenclature, identification, description, type specimen, external morphological characters of 32 orders, systematic, phylogeny and theory of entomo-taxonomy.

**272024 昆蟲分類學實習 1 必 張萃嫻、下**

本課程配合昆蟲分類學之正課課程實際操作，指導學生進行昆蟲標本採集、製作及處理標本、繪圖、特徵判別及描述，並進一步利用檢索表來進行標本之鑑定及分類。

**272024 Practice of Insect Taxonomy 1 R T. Y. Chang, S**

This laboratory course emphasize in the technical training and its



application about the insect taxonomy. Students will practice some techniques, for example collection, dissection of specimen, illustration, description, diagnosis, using the key to identify specimen and classification etc., about entomo-taxonomy.

## 272019 植物病毒學

2

必

陳滄海、上

本課程除傳統植物病毒學範疇外，並涵蓋從分子層次討論植物病毒之構造，引起之植物病害，田間發生及防治，期能達到理論與實務並重；內容包括植物病毒分子層次的構造及核酸組成，病毒分離、鑑定與純化，在寄主體內之增殖及轉移，媒介傳播、遺傳及變異，其引起之病害及田間發生生態與防治。

## 272019 Plant Virology

2

## R

T. H. Chen, F

The course will give conventional and molecular level of plant viruses in order to help the students to get much theoretical and practical knowledge about plant virology. The contents cover the molecular structure of virion and genome, virus isolation, identification and purification, transmission, variation, ecology, nomenclature and classification, diagnosis and control.

## 272020 植物病毒學實習

1

必

陳滄海、上

本課程主要介紹植物病毒學的研究方法及操作技術；其內容包括植物病毒之分離及純化，理化性質之測定，內含體之觀察，各種傳播方式，抗血清之製備與應用，電子顯微鏡之觀察，病毒核酸之純化及電泳技術，病毒病害診斷新技術等。

## 272020 Practice of Plant Virology

1

## R

**T. H. Chen , F**

This Lab. provides the students with the basic plant virological knowlege and methodology necessary for virus diagnosis and research. Our emphasis is on isolation and purification of plant virus, basic virus characterization and storage, histological analysis of inclusion bodies,transmission tests, serological techniques, electron microscopy, electrophoretic techniques..Finally a tissue culture technique to get rid of plant virus is also included.

## 272026 農業昆蟲學(一)

2

必

張萃嫻、上

本課程主要介紹昆蟲與農業的關係，瞭解重要農業害蟲之分類地位、形態特徵、生活習性、發生生態、危害狀況、經濟重要性及其防治方法，並介紹綜合防治之原則與實施方法。

**272026 Agricultural Entomology (I)**

2

## R

T. Y. Chang, F

This course deals with the relationships of major agricultural insect pests and their crop damaged. For each pest insect, its morphological character, life cycle, seasonal occurrence, injury and damage, economic importance as well as the methods of control are introduced. The strategies and tactics of integrated pest



management are also discussed.

**272027 農業昆蟲學實習(一)**

**1 必 張萃嫻、上**

本課程主要包括認識各主要作物之害蟲與其為害徵狀、害蟲之族群消長調查方法、為害損失估算及主要防治方法，使學生實際認知當前重要作物之主要害蟲，及其抑制的方法。

**272027 Practice of Agricultural Entomology (I) 1R T. Y. Chang, F**

This course includes the introduction of pests and their damages of major crops in Taiwan. The identification, methods to study the population dynamics, analysis of loss and damage of host plant, and the management methods of pest insects on various major crops, for example rice, wheat, fruit, vegetables, flower etc., are emphasized.

**272028 植物病理學(一)**

**2 必 陳滄海、上**

本課程討論非生物性因素及生物性因素(如毒素、類病毒、原核性細菌、菌質、真菌、高等寄生植物、線蟲、原生物等)造成作物病害之原理，說明寄主與病原間之相互關係，病變過程、致病作用機制，及植物抗病之原理。同時闡明環境因素與病勢發展之關係，繼而以田間主要作物病害、花卉病害、蔬菜病害、果樹病害及溫室病害分別說明，並配合防治原理，討論其防治方法。

**272028 Plant Pathology (I)**

**2 R T. H. Chen, F**

The major contents of this course is to discuss the abiotic and biotic factors (including viruses, viroids, prokaryotic bacteria, mollicutes, fungi, parasitic higher plants, nematodes and protozoa) that caused crop diseases. The host-pathogen interaction relationship, pathogenesis, pathogenicity, and mechanisms of plant defense systems are explained in cases. The environmental factors influencing diseases development reveal the knowing of disease principles. The most important diseases of field crops, ornamental plant, fruit trees, vegetable and greenhouse plants would be discussed implicated with the principles of disease management.

**272029 植物病理學實習(一)**

**1 必 陳滄海、上**

本實習主要包括病原之分離、培養、鑑定及接種等技術。由田間之採集病害標本進行診斷，判斷病因及確立病害種類之技術方法及相關技術，並以病害診斷及使用農藥之專家系統電腦程式教導學生，如何應用個人電腦作為作物病害診斷與防治之工具。本課程亦注重病害之病變過程之變化，病徵之認識，病組織之解剖等組織觀察技術。

**272029 Practice of Plant Pathology (I)**

**1 R T. H. Chen, F**

The major objectives of this lab. are to let student familiar with pathogen isolation, culture, identification, and inoculation techniques for disease diagnosis and chemicals application compiled in personal computer or would be applied for student uses. The micro-observation

techniques are also used for disease's tissue anatomy, symptom classification and disease development are also instructed to students.

272030 農業藥劑學	2	必	楊永裕、上
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介紹殺蟲劑、殺菌劑、除草劑及其他農藥的特性，劑型及作用機制，並討論農藥使用後對人畜，作物及環境的影響。

## 272030 Pesticide 2 R Y.Y.Yang.F

Managerial, physiological and ecological effects of chemicals applied to crops and soils. Includes insecticides, fungicides, herbicides and other pesticides. Types of formulations, proper application, safety, environmental aspects and historical aspects are covered.

272031 農業藥劑學實習 1 必 楊永裕、上

介紹各種毒性測試方法，製劑，正確噴藥方法，安全用藥，標籤製作及農藥殘量分析方法等。

<b>272031</b>	<b>Practice of Pesticide</b>	<b>1</b>	<b>R</b>	<b>Y.Y.Yang.</b>	<b>F</b>
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Introduce different kinds of toxicity test, formulation, calibration, safe use of pesticides, labeling and pesticide residue analysis. Working in the experimental farm to get practical experience in conducting toxicity trials in the field.

272041 雜草管理 2 必 鄭秋雄、下

本課程主要介紹雜草之認識、分類、鑑定、生理、生態及對作物、環境、人類之影響，繼而說明草害管理之演變及主要管理技術。主要內容包括雜草之起源、雜草之危害與利用、雜草之生理特性與生態、雜草防治、殺草劑之劑型、特性、殺草機制與施用方法。

<b>272041</b>	<b>Weed Management</b>	<b>2</b>	<b>R</b>	<b>C. C. Cheng, S</b>
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This course is mainly to recognize weeds and introduce the classification, identification, physiology, ecology of weeds, effects on crops, environment and humanity, and instruct the evolution and management technologies of weeds. The main content includes the origin of weeds, the harm and use of weeds, the physiological characters and ecology of weeds, weed control, and the form, properties, weed control mechanism and use methods of herbicide.

272042 雜草管理實習 1 必 鄭秋雄、下

本實習主要介紹認識雜草及雜草生態相，進而了解各種雜草的管理技術，包括生物性、化學性殺草劑特性及應用。主要內容包括雜草形態、生理、生態環境之觀察、雜草分類、雜草標本製作及殺草劑之施用方法。

<b>272042 Practice of Weed Management</b>	<b>1</b>	<b>R</b>	<b>C. C. Cheng , S</b>
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The purposes of this course are to make students understand weeds and ecological distribution, and introduce each management technologies of weeds, which include the properties and application of biological and chemical herbicides. The main content includes the observations of morphology, physiology and ecology of weeds, weed classification, the manufacture of weed specimens and spray methods of herbicide.

### **272036 植物病理學(二)**

**2 必 陳滄海、下**

本課程討論非生物性因素及生物性因素(如毒素、類病毒、原核性細菌、菌質、真菌、高等寄生植物、線蟲、原生物等)造成作物病害之原理，說明寄主與病原間之相互關係，病變過程、致病作用機制，及植物抗病之原理。同時闡明環境因素與病勢發展之關係，繼而以田間主要作物病害、花卉病害、蔬菜病害、果樹病害及溫室病害分別說明，並配合防治原理，討論其防治方法。

### **272036 Plant Pathology (II)**

**2 R T. H. Chen, S**

The major contents of this course is to discuss the abiotic and biotic factors (including viruses, viroids, prokaryotic bacteria, mollicutes, fungi, parasitic higher plants , nematodes and protozoa) that caused crop diseases. The host-pathogen interaction relationship, pathogenesis, pathogenicity, and mechanisms of plant defense systems are explained in cases. The environmental factors influencing diseases development reveal the knowing of disease principles. The most important diseases of field crops, ornamental plant, fruit trees, vegetable and greenhouse plants would be discussed implicated with the principles of disease management.

### **272037 植物病理學實習(二)**

**1 必 陳滄海、下**

本實習主要包括病原之分離、培養、鑑定及接種等技術。由田間之採集病害標本進行診斷，判斷病因及確立病害種類之技術方法及相關技術，並以病害診斷及使用農藥之專家系統電腦程式教導學生，如何應用個人電腦作為作物病害診斷與防治之工具。本課程亦注重病害之病變過程之變化，病徵之認識，病組織之解剖等組織觀察技術。

### **272037 Practice of Plant Pathology (II)**

**1 R T. H. Chen, S**

The major objectives of this lab. are to let student familiar with pathogen isolation, culture, identification, and inoculation techniques for disease diagnosis and chemicals application compiled in personal computer or would be applied for student uses. The micro-observation techniques are also used for disease's tissue anatomy, symptom classification and disease development are also instructed to students.

### **272034 農業昆蟲學(二)**

**2 必 張萃嫻、下**

本課程主要介紹昆蟲與農業的關係，瞭解重要農業害蟲之分類地位、形態特徵、生活習性、發生生態、危害狀況、經濟重要性及其防治方法，並介紹綜合防治之原則與實施方法。

**272034 Agricultural Entomology (II)                      2            R            T. Y. Chang, S**

This course deals with the relationships of major agricultural insect pests and their crop damaged. For each pest insect, its morphological character, life cycle, seasonal occurrence, injury and damage, economic importance as well as the methods of control are introduced. The strategies and tactics of integrated pest management are also discussed.

**272035 農業昆蟲學實習(二)                      1            必            張萃嫻、下**

本課程主要包括認識各主要作物之害蟲與其為害徵狀、害蟲之族群消長調查方法、為害損失估算及主要防治方法，使學生實際認知當前重要作物之主要害蟲，及其抑制的方法。

**272035 Practice of Agricultural Entomology (II)    1R            T. Y. Chang, S**

This course includes the introduction of pests and their damages of major crops in Taiwan. The identification, methods to study the population dynamics, analysis of loss and damage of host plant, and the management methods of pest insects on various major crops, for example rice, wheat, fruit, vegetables, flower etc., are emphasized.

**272038 植物非生物性病害                      2            必            林宜賢 下**

課程內容涵蓋植物對於環境中各種非生物性因素的影響產生的變化，諸如各種氣象，營養生理，藥害及環境脅迫如污染對植物產生傷害及產量的變化，討論各種因素的為害特性，病因鑑定與各種因應措施，利用不同的策略與方法改善植物生長。

**27238 Abiotic Disorders of Plant                      2            R            S**

Categories in this course are plants affect by abiotic factors, concerned climate injury, poor or excess nutritions, pesticide's injury, environmental stress especially in pollutions, the characteristic of different abiotic factors, diagnosis and suitable control methods.

**272039 蟎蟬學                                      2            必            華 真、下**

本課程主要介紹蟎蟬的外部形態、內部構造、族群生態及重要蟎蟬之分類，與植食性蟎類對作物所引起之為害特徵，及經濟有效的綜合管理方法。

**272039Acarology                                      2R            T. Hua, S**

The objective of this course is to introduce basic knowledge of the Acari, Major content includes the morphological characteristics, population ecology, injury and damage, economic importance as well as the control methods of the Acari, under the principle of integrated pest management.

**272040 蟎蟬學實習****1 必****華 真、下**

本實習目的，讓學生利用光學顯微鏡及掃描式電子顯微鏡認識基本之蟎蟬外部形態構造及功能，與觀察蟎類對重要經濟作物的為害特徵。

**272040 Practice of Acarology****1 R****T. Hua, S**

This course offers a basic understanding on morphology structure and function, the injury on crop of Acari by light microscopy and scanning electron microscopy practical operation.

**二、專業選修科目 Required Courses****272048 微生物學****2 選**

本課程之目的，在使學生瞭解微生物的起源，化學的基本原理，顯微鏡與染色，原核生物與真核生物細胞之形態、構造及功能，微生物的生長與代謝，遺傳與生物技術及微生物的防治，以增進學生未來在研究植物病原微生物之相關基礎。

**272048 Microbiology****2 E**

The purpose of this course is to study the microbiological science and to give students the basic knowledge further study of phytopathogenic microbiology. Course contents include the original of microbiology, chemical principles, microscopy and staining, morphology、structure and function of prokaryotic and eukaryotic cell, microbial growth and metabolism, microbial genetics and biotechnology, and the control of microorganisms.

**272049 微生物學實習****1 選**

本實習之目的在訓練並建立學生在微生物學領域之基本基礎與技術，課程內容包括顯微鏡在微生物大小測量之運用，細菌的染色，培養基之製備，移種技術，微生物之分離、培養及接種技術，微生物之生理生化測試，微生物之定量及物理與化學因子抗微生物活性之評估。

**272049 Practice of Microbiology****1 E**

The purposes of this course are critically selected and tested to instruct students effectively in the basic principles and techniques within microbiological areas. Course contents include the microscopic measurement of microorganisms, bacterial staining, media preparation, culture transfer techniques, techniques for isolation, cultivation, and inoculation of



microorganisms, physiological and biochemical tests of microorganisms, determination of cell number of microorganisms, and evaluation of the antimicrobial activity of physical and chemical agents.

### **272054 植物組織培養技術**

**2 選**

**鄭秋雄、上**

本課程主要介紹組織培養之基本知識、技術及其在植物抗病、抗蟲、抗藥及抗逆境等品種之選育與保存上之應用。主要內容包括組織培養學簡史、培養基組成分、培養環境、細胞培養、植物再生、莖頂培養、花藥培養、雜種胚胚培養、原生質體培養、細胞融合、抗病細胞篩選技術及微體繁殖等。

### **272054 Plant Tissue Culture Techniques**

**2**

**E**

**C. C. Cheng, F**

The course is to introduce the basic knowledge and techniques of tissue culture, and how to apply in the selection and preservation of disease-resistant, insect-resistant, drug-resistant, and environmental stress-resistant plant. The main content includes the brief history of tissue culture, medium composition, cultural condition, cell culture, plant regeneration, meristem culture, anther culture, hybrid embryo culture, protoplast culture, cell fusion, disease-resistant cell selection and mass propagation.

### **272055 植物組織培養技術實習**

**1**

**選**

**鄭秋雄、上**

主要訓練學生在組織培養方面之基本技術，內容包括：培養基之製備、無病植株大量繁殖、細胞培養及器官分化培養、細胞融合與抗病、抗蟲、抗藥、抗逆境品種之選育。

### **272055Practice of Plant Tissue Culture**

**1**

**E**

**C. C. Cheng, F**

### **Techniques**

The course concentrates on the training of the basic techniques of tissue culture. It includes the media preparation, the mass propagation of disease-free plant, the cell culture and organ differentiation culture, the cell fusion, the selection of disease-resistant, insect-resistant, drug-resistant and environmental stress-resistant plant.

### **272056 有害動物**

**2**

**選**

有害動物的範圍包含除昆蟲，線蟲及原生動物外，可能會危害植物的動物，如嚙齒類、鳥類、蝸牛等。討論的範圍有動物所造成的損害嚴重性、危害特性、生態條件、防治策略的制定原則、施行注意事項、效果評估等。目的在使對植物的整體保護概念能更完整。

### **272056 Noxious Animals**

**2**

**E**

Animals besides insects, nematodes, protozoas are termed as noxious animals, i.e. rodents, birds, snails etc. Categories discussed are characteristics of damages



to plants, ecological situations, principle、practicing and assessment of control strategies.

**272061 農企業管理 2 選 上**

本課程乃系統性地介紹一個農企業經理人應具備之技能，包括：農企業管理學內涵、農企業經營規劃與決策、消息收集與分析、預測方法、農企業產品與生產規劃、農企業資金與預算、農企業成本與收益觀念、不同評價之成本項目與效益分析、農企業行銷、農業政策與環保問題、農企業組織、人力資源、農企業控制原則、農企業經營目標之設計。

**272061 Agribusiness Management 2 E F**

The course gives a systematic knowledge for agribusiness manager includes as follows: The contents of Agribusiness; Planning and Decision; Information collection and Analysis; Forecasting; Products and Production planning; Capital and Budget; Cost and Revenue; Cost evaluation and Benefit analysis; Agribusiness marketing; Agricultural policy and environment protection; Agribusiness Organization; Manpower Resources; Controlling; Management Indicators.

**272062 有機農業概論 2 選 上**

本課程主要介紹有機農業的理念，國內外有機農業的發展及其重要性，以及達成有機農業經營的管理策略。

**272062 General Discussion of Organic Farming 2 E F**

The course is mainly to recognize organic farming, introducing its importance and development in different countries, and the management strategy of organic farming.

**272032 昆蟲生理學 2 選 楊永裕、上**

本課程主要介紹昆蟲營養、呼吸、消化、排泄、循環、神經、生殖及腺體等系統之生理作用及機制。強調昆蟲為適應各種環境而在生理構造及功能上的變化，並比較昆蟲與哺乳動物生理間的差異。

**272032 Insect Physiology 2 E Y.Y.Yang S**

Introduce life process of the insects, including major life system, nervous system, reproductive development and behavior. Emphasize the physiological variation of the structure and function in insects to adapt the living environment. The differences of physiology between insect and mammals are discussed.

**272003 植物學 2 選 鄭秋雄、上**

本課程之目的在使學生瞭解植物學之基本知識。包括植物細胞、根、莖、葉、花、果實及種子之構造與功能，以及由低等植物至高等植物，包括藻類、菌類、苔蘚類與蕨類等

## 之形態與生活史。

**272003 Botany**

2 E

C.S.Jeng, F

The purpose of this course is to provide students with basic botanical science. Course contents include the structure and function of plant cells, roots, stems, leaves, flowers, fruits and seeds of higher plants, the morphology and life cycles of lower and higher plants, including algae, fungi, mosses and ferns .

## 272004 植物學實習

## 1 選

鄭秋雄、下

本實驗課程首先讓學生熟習顯微鏡之操作，繼而在顯微鏡下觀察植物細胞之構造、有絲分裂過程以及植物各組織與根、莖、葉、花、果實及種子等器官之構造；觀察低等植物如藻類、菌類、苔蘚類與蕨類等之形態與構造。

**272004 Practice of Botany**

**1 E**

C.S.Jeng, F

The objective is firstly to acquaint the students with the techniques of operating the microscope. Secondly, to enable the students observing the structure and mitosis process of plant cells; the anatomy of roots, stems, leaves, fruits and seeds of higher plants will be observed under a microscope. The morphology and structure of lower plants, such as algae, fungi, mosses and ferns are also studied in this course.

## 272050 園藝學

## 2 選

這是門概論課程，介紹園藝作物：果樹、蔬菜、花卉的生產、處理、和利用原理；觀賞植物在景觀和環境上的運用。認識相關的科技與產業，它們在經濟上的重要性和在國內的分布情況。了解園藝栽培在世界上對於提供養分和食物，改善環境生活品質，美化景觀，及醫藥利用上所扮演的角色。

## 272050 Horticulture

## 2 E

Basic principles of production, processing and utilization of fruit, vegetable, flower and ornamental crops are introduced in this course. The economic importance and distribution of horticultural enterprises, roles of horticulture in world nutrition and food supply, improvement of environmental quality in the landscape, aesthetic values, and medicinal uses are also covered.

## 272051 園藝學實習

## 1 選

藉由田間作物的育苗、栽培和管理過程，初步了解所涉及的生產技術、科學、和可能遭遇的問題。認識常見的園藝作物。調查重要作物產銷情況及訪問業者。以此建立對本產業的整體認識。

## 272051 Practice of Horticulture

# 1 E

The goal is to train students by practicing basic methods of plant production in the field, in order to experience technologies involved, and problems

encountered; identifying common horticultural crops. Statistical searches are made on important horticultural crops. In the end of the course, students are presenting the results of visiting growers. So a overall understanding of this field is established.

### 272052 植物分類學

2 選

楊勝任、下

研究植物分類發展史、命名、重要種子植物分類群特徵數辨識、樹種的重要分布。

### 272052 Plant Taxonomy

2

E

S. Z. Yang, S

This course is designed to introduce the aim of taxonomy, principle and history summary. The content includes taxonomic literatures, nomenclature, concepts of taxa, the construction and use of keys, field collections method and herbarium of PPI introduction, phytography and the terminology of plant description, criteria used in classification of angiosperms and the phylogeny of angiosperms.

### 272053 植物分類學實習

1

選

楊勝任、下

植物分類學實習乃為使學生在 PPI 標本館與野外具有鑑定維管束植物的能力。其授課內容包括讓學生實際於野外採集並製成臘葉標本、教導學生如何使用科檢索表、以形態術語描述植物外部形態、參訪國內其它標本館並說明其功能與分類的價值、觀察臘葉標本與幻燈片加強野外鑑定能力。

### 272053 Practice of Plant Taxonomy

1

E

S. Z. Yang, S

This practice of plant taxonomy is to provide the students with the ability to identify the vascular plants by the herbarium of PPI and in the fields. The content includes collecting plants in the fields and specimens made, using the key to the families to identify the unknown plants in the family level, describing the morphology of parts of plants by the terminology, examining the specimens of herbarium and slides to improve the ability of identification, visiting another herbarium of Taiwan to introduce the function and value to the study of taxonomy.

### 生態學

2

選

本課程講授生態學的基本概念，內容包含緒論、生態系統、生物與環境、族群生態、群落生態以及應用生態等項目。

### Ecology

2

E

The purpose of this course is to study the basic concepts of ecology. Course contents include topics of ecosystems, organisms and environments, population ecology, community ecology, as well as applied ecology. The lectures would also include biodiversity and ecological characteristics of Taiwan.

### 272057 資源昆蟲

2 選

華 真、下

本課程包含範圍相當廣泛，對人類有用或有益的昆蟲皆可列為此課程之範圍，然就本省之環境及條件所需，本課程以有用之昆蟲為主，其中包括蠶之養殖、利用，蜂之飼養、蜂產品之介紹及採收，此兩大項為主。其次在介紹與人類相關之藥用昆蟲及相關之藥理；食用昆蟲之種類及其應用；觀賞昆蟲之種類及利用；以及資源保育昆蟲之介紹。至於天敵應用之昆蟲則不在本課程之內。

### **2752057 Insects Resources**

**2 E T. Hua, S**

This course includes useful and beneficial insects, especially in the sericulture, bees keeping, bees products, rearing silkworms, medical insects and edible insects. Also the wildlife resource insects is arranged in this course, exclude the natural enemies and its application.

### **272058 農業氣象學**

**2 選 唐 琦、下**

本課程先介紹各種氣象要素（如日射、日照、溫度、氣壓、風、雲、霧、降水、蒸發等）應用於農業生產環境之測定方法介紹，其次對於大氣主環流、次環流（季風、氣團、鋒、氣旋）、局部環流（海風、陸風、山風、谷風）、劇烈天氣、颱風、農業氣象災害、農地微氣候形成過程逐章闡述，並由天氣變化觀察，進而使習者將相關氣象學相關知識融入農業耕作及環境關懷。

### **2752058 Agricultural Meteorology**

**2 E C. Tang, S**

This course will introduce the meteorological elements such as solar radiation, sunshine duration, temperature, humidity, air pressure, wind, cloud, fog, precipitation and evaporation in the initial stage. Then the main circulation of the atmosphere, secondary circulation (monsoon, air masses, front, cyclone), local circulation (sea breeze, land breeze, uphill breeze, downhill breeze), violent weather, typhoon, agricultural meteorological disaster, process of microclimate formation on farmland, will be explain chapter by chapter. By means of weather observation is helpful for the learners to apply the knowledge of meteorology in agricultural cultivation and then will be concerned the environment.

### **272025 遺傳學**

**2 必**

本課程的目的在介紹遺傳的基本原理及其應用。主要內容包含孟德爾遺傳定律、有絲分裂和減數分裂、基因的連鎖和遺傳定位、DNA 的構造及複製、突變的機制及 DNA 修補、基因的表達、和族群遺傳等。

### **272025 Genetics**

**2 R**

This course is aimed at introducing the basic principles and applications of Genetics. The main content includes Mendelian genetics, mitosis and meiosis, gene linkage and genetic mapping, the structure and replication of DNA, mechanisms of mutation and DNA repair, gene expression, and population genetics.

**272060 菇蕈栽培技術****2 選**

食用菌如洋菇、草菇、鮑魚菇、木耳、金針菇及香菇等菇類之生理、生態及形態之認識，栽培方法為基本內容。介紹各種菇類栽培之理論與實際配合，探究菇類生長之條件，對目前國內外流行而適合企業化經營之食用菌類特別作有系統之說明，以利選讀生將來應用。

**272060 Edible Fungi Cultivation****2 E**

Edible fungi such as common mushroom, chinese mushroom, oyster mushroom, Jelly fungi mushroom and shiitake are the major subjects to be discussed in lectures. The physiology, ecology and morphology provide basic information to culture the mushroom. Knowing how to compost manure, isolates the mycelia theory and practical operation, especially emphasized on large-scale commercial cultivation of mushrooms in status and future of the world, and to meet the need of techniques and knowledge for mushroom production.

**272012 植物生理學****2 必**

本課程在使學生獲得有關植物生理學之基本知識，課程內容包括植物生理之概念、植物之吸水及蒸散作用、礦物營養及養分之吸收輸送、光合作用、呼吸作用、氮素、脂質及其他二次代謝物之代謝。

**272012 Plant Physiology****2 R**

The purpose of this course is to acquaint students with knowledge of basic principles and the application of plant physiology on the agricultural system. The contents include: Introduction of concepts in plant physiology, the process of water absorption and transpiration, absorption and translocation of mineral, nutrient, photosynthesis, respiration, metabolism of nitrogen, lipid and secondary metabolites.

**272021 植物害蟲研究法實習****1 選****陳文華、上**

本課程將操作研究昆蟲的相關技術，包括養蟲、標本採集、製作、照相及鑑定；並練習資料收集、分析及撰寫報告。由實際操作的訓練中，學生可學習到獨立進行研究的基本技術。

**272021 Experimental Methods of Entomology****1 EW. H. Chen F**

Introduce methods used to study insects. Topics included insect rearing, collecting, mounting, microphotography and identification. Data collection, analysis and report writing will be taught. Students will learn the basic techniques to start research independently.

**272022 植物病理學研究法實習****1 選****陳麗鈴**

本實習旨在訓練學生有關植物病理學的基本研究技術，內容包括病理相關文獻蒐集、利用及



論文寫作。培養基之製作、無菌操作技術、病原菌的分離及培養、病害診斷技術、病害的接種及感染、病原菌的保存、田間取樣技術以及病害防治技術等。

## **272022 Experimental Methods of Plane Medicine 1 E**

The course provides the students with the basic methodology for plant pathological studies. The exercise included the information technique and writing skill for publication. Media preparation and utilization、disinfection and sterilization technique、isolation of plant pathogen、establishment of disease、preservation of plant pathogens as well as the disease management methods.disease-resistant, insect-resistant, drug-resistant and environmental stress-resistant plant.

## **272059 昆蟲形態學 2 選 張萃嫻、上**

本課程主要介紹昆蟲發生之源始及其外表形態各部構造之特徵、功能並推論其演化；課程內容包括昆蟲發生、體壁形成、頭部及其副器之構造與功能、胸部及足與翅之構造與功能、腹部及其副器之構造與功能等。

## **272059 Insect Morphology 2 E T. Y. Chang, F**

The objective of this course is to introduce the origin, character, function and evolution of external morphology structure of insect. Topics includes insect development, the integument and its function, the head structure and its appendages, the thorax structure and its appendages, includes legs and wings, the abdomen and its appendages and inferring the function and evolution of external morphology structure of insect.

## **272069 熱帶植物蟲害 2 選**

本課程主要介紹熱帶農園藝作物、果樹及花卉之蟲害，包括為害特徵、病因、蟲害發生生態、診斷技術及防治管理方法等。

## **272069 Pests of Tropical Plants 2 E C. Y. Hsin,F**

This course offer a complete profile of the pest and disease occurred in tropical palm trees, fruit trees and flower plants. The major contents included symptoms, etiology of pathogen, ecology, diagnostic techniques and control.

## **272070 熱帶植物病害 2 選**

本課程主要介紹熱帶農園藝作物、果樹及花卉之病害，包括為害特徵、病因、病原菌特性、病害發生生態、診斷技術及防治管理方法等。

## **272070 Diseases of Tropical Plants 2 E**

This course offer a complete profile of the pest and disease occurred in



tropical palm trees, fruit trees and flower plants. The major contents included symptoms, etiology of pathogen, ecology, diagnostic techniques and control.

### **272071 設施作物蟲害管理 2 選**

本課程主要介紹在各種設施中栽培之作物如蔬菜、木瓜、花卉、觀賞植物等之蟲害種類、發生生態、防治及管理。

### **272071 Management of Insect Pests under Structures 2 E C. Y. Hsin,F**

This course introduce the pests and diseases found in crops, fruit trees, flowers and ornamental plants under construction. The contents included kinds of pests and disease found in the construction, their occurrence, control and management.

### **272072 設施作物病害管理 2 選**

本課程主要介紹在各種設施中栽培之作物如蔬菜、木瓜、花卉、觀賞植物等之病害種類、發生生態、防治及管理。

### **272072 Management of Crop Disease under Structures 2 E**

This course introduce the pests and diseases found in crops, fruit trees, flowers and ornamental plants under construction. The contents included kinds of pests and disease found in the construction, their occurrence, control and management.

### **272073 植物流行病學 2 選**

本課程討論植物疾病之主要因子，寄主病原體，環境因子，人類耕作管理與流行病發生之關聯性；流行病之發生類型與比較，發展過程，模式及電腦模擬；植物流行病之預測及預警與植物病理上專家系統之結合。

### **272073 Plant Disease Epidemiology 2 E**

The contents of this course are listed as follows: The plant disease elements (host, pathogen and environment factors) affecting development of plant disease epidemics, the patterns and comparison of epidemics; the development, modeling and computer simulation of plant disease epidemics; and the forecasting and disease-warning systems of plant disease epidemics combining with expert systems of plant pathology.

### **272074 蟲害發生預測預報 2 選**

本課程首先教授包括昆蟲生長發育、休眠滯育、遷移擴散等影響發生之生物學特性，其次探討生物與非生物因子對昆蟲發育與發生的影響，再闡述昆蟲族群數量消長之變動規率，其中包括族群生長速率、生命表製作與分析、害蟲發生預測之數學模式應用、族群消長因素分析，以及族群調

查技術與資料處理，最後討論害蟲預測預報之方法與實例。

## **272074 Monitoring and Forecasting of Insect Pests**

2

E

The biological characteristics of insect growth, development, diapause and migration are introduced at the beginning of this course. Then, the dynamic interactions found among insects and their relationships to both the biotic and abiotic components of the environment are studied. The techniques of population sampling, age-stage-specific life table forming, population dynamics analyzing and modeling are taught to deal with various predictive methods of the insect population dynamics.

## **272075 昆蟲系統學原理**

2 選

張萃嫻

昆蟲系統學是研究昆蟲系統演化及親緣關係方法與原理的科學。課程內容主要介紹分類特徵、鑑定與檢索表、昆蟲命名、模式標本、種的概念、新種形成原理及昆蟲系統學三大學派等概念。

## **272075 Principle of Systematic Entomology**

2

ET. Y. Chang

Systematic is the scientific study of the kinds and diversity of organisms and of any and all relationships among them. This course is to introduce the taxonomic characters, identification and keys, zoological nomenclature, type specimens, species concepts, origin of new species taxa and speciation and the three schools of macrotaxonomy.

## **272076 樹木病害學**

2

選

本課主要介紹林木病害之特性、發生調查、診斷及管理，森林病害標本採集保存。並介紹苗木、枝幹、葉部、根部病害及立木與木材腐朽等各論。

## **272076 Dendropathology**

2

E

This course is to introduce the characteristics of damage induced by forest diseases and insect pests. It covers pest investigation, diagnosis and management, and specimen collection and preservation. A comprehensive discussion on pests of seedling, twig, foliage, root and wood decay is also included.

## **272077 樹木蟲害學**

2

選

本課主要介紹林木蟲害之特性、發生調查、診斷及管理，森林蟲標本採集保存。並介紹苗木、枝幹、葉部、根部蟲害及立木與木材腐朽等各論。

## **272077 Forest Pests**

2

E

This course is to introduce the characteristics of damage induced by forest diseases and insect pests. It covers pest investigation, diagnosis and management, and specimen collection and preservation. A comprehensive discussion on pests of seedling, twig, foliage, root and wood decay is also included.

## **272067 昆蟲病理學**

2

選 上

本課程將介紹高等昆蟲病理學，其內容包括：機械的、物理的和化學的傷害，營養和新陳代謝疾病，健康昆蟲體內細胞外之微生物和細胞內之微生物抗病及免疫，癥狀和病理學，細菌感染，真菌感染，病毒感染，原生動物和線蟲類感染，昆蟲病理學的應用和生物防制。

### 272067 Insect Pathology

2 E F

This course is to introduce advanced topics on insect pathology. Its contents include: mechanical, physical, and chemical injuries; diseases of nutrition and metabolism; extracellular microbiota of healthy insects; intracellular microbiota; resistance and immunity; symptoms and pathologies; bacterial infections; fungal infections; viral infections; protozoan and nematode infections; applied insect pathology; and biological control.

### 植物蟲害診療實習

1 選 上

本課程內容包括各種重要果樹作物害蟲之鑑定，害蟲危害過程及遺留痕跡的診斷，自田間採集蟲害標本，攜回實驗至，在解剖顯微鏡下觀察，依照圖鑑比對特徵來確認害蟲種類。

### Practice of Diagnosis and Management of Insect pests2

E F

Introduce the identification of insect species and the diagnosis of insect infestation on fruit trees. Students learned to collect samples from various parts of plants from the field, examine symptoms and excreta caused by insects. Pests are studied under dissecting microscope and compared with identification keys.

### 272015 生物化學

2 必 許祥純、上

本課程主要介紹生物體構成分子之組成及結構，以提供學生生化分子之基本概念，並建立修習代謝生化及分子生物的基礎。其內容包括：水及緩衝溶液、胺基酸及蛋白質、酵素、核酸、碳水化合物及脂質之介紹。

### 272015 Biochemistry

2 R S. C. Sheu, F

This course is to introduce the composition and structure of biomolecules. The purpose of this course is to provide students with basic concepts of biomolecules for the further study of metabolism and molecular biology. The topics involved in this course are water and buffer, amino acid and protein, enzyme, nucleic acid, carbohydrate and lipid.

### 272016 生物化學實驗

1 必 許祥純、上

本課程目的在使學生藉由實際操作了解生化分子的特性及生化反應的原理，並學習 pH 計、分光光度計等儀器的操作。實習內容包括：緩衝溶液之製備、胺基酸之滴定、胺基酸及蛋白質之定性分析、蛋白質之定量、醣類之定量分析、酵素活性測定及膠過濾法。

### 272016 Practice of Biochemistry

1 R S. C. Sheu, F

This course is designed for students to understand the characteristics of

biomolecules and the principles of biochemical reactions in the lab. Students also learn how to operate some instruments such as pH meter, spectrophotometer in this course. It includes buffer preparation, titration of amino acid, qualitative and quantitative analysis of amino acid and protein, quantitative analysis of carbohydrates, enzyme assay and gel filtration chromatography.

### **272063 生物技術與植物醫學**

**2 選**

**鄭秋雄 下**

本課程主要介紹生物技術之基本概念及其在植物保護上之應用。課程內容包括基因構造及功能、基因表現及基因重組技術、細胞融合技術、組織細胞培養技術等基本概念及生物技術應用於植物病蟲害之診斷與抗病、抗蟲、抗藥、抗環境逆境品種之選育。

### **272063 Biotechnology and Plant Medicine 2 E C. C. Cheng, S**

The course is to introduce the concept of biotechnology and applying in the plant protection. The contents of this course include the structure and function of gene, the technologies of gene expression and recombinant DNA, cell fusion, tissue and cell culture, biotechnology applies in the diagnosis of plant diseases and insect pest and the selection and breeding of disease-resistant, insect-resistant, drug-resistant, environmental stress-resistant plants.

### **272064 植保法規及檢疫**

**2 選**

本課程之目的，在使學生瞭解及熟知與植物保護及檢疫相關的各種法規。

### **272064 Plant Protection Regulations and Quarantine 2E**

The purpose of this course is to study the laws and regulations of plant protection and to give students the basic knowledge of pest quarantine and how to prevent import and spread of plant pest entry into or passage through our country from other countries. Course contents include the agreement on the application of sanitary and phytosanitary measures、the law and bylaw of commodity inspection and quarantine、the law and bylaw of pesticide、the law and bylaw of plant quarantine etc.

### **272065 生物防治**

**2 選**

**鄭光哲、下**

本課程主要廣泛討論目前世界上可能應用之天敵及微生物可以用來作為綜合防治中之生物防治技術，以代替傳統化學農藥之防治。天敵及微生物個別詳以介紹其應用潛力，並以目前成功之病害、蟲害、草害之生物防治例子說明其成功因素及應用方法，作為發展生物防治之理論基礎。

### **272065 Biological Control**

**2**

**E**

**K. C. Cheng, S**

The course of biocontrol of plant diseases and pests are attempted to scrutinize very carefully the current status of biological control in agricultural

integrated pest management system in a broad sense. The application and implementation of natural enemies and microorganisms for disease and pest control to instead of traditional chemical controls are the objectives. The possible candidates *vitae* of control agents including natural enemies and microbes would be brought for detail discussion. The components and approaches of successful implementative examples of biocontrol in the course could serve as revealing perspectives for future of biocontrol practices.

## 272066 有機農業病蟲害管理

2

選

華真、下

有機農業的病蟲害管理目的，利用各種非農藥的病蟲害管理方法，以預防代替清除，例如輪作及耕作管理、物理防治、生物防治、種植忌避或共榮植物及天然資材防治等，進行病蟲害綜合管理。

## 272066 Organic agriculture pest management 2

**E**

Hua, Tsen 、 S

The purpose of the course is to offer knowledge on organic agriculture pest management, using a variety of non-pesticide pest management methods to prevent instead of clear, for example, crop rotation and tillage management, physical control, biological control, planting plants and prosperity repellent or prevention of natural materials such as, for integrated pest management.

## 272068 居家害虫

2

選

上

本課程主要介紹與傳播人體疾病相關之重要病媒昆蟲。尤其強調蚊蠅等重要病媒之生物學、其與傳播病原間的關係以及防治策略。

## 272068 Domestic Pests

2

E

F

This lecture introduces the major medically important insect vectors. The course highlights the biology of significant medical insects, the interaction and relationship of vector and disease transmitted, as well as their control methods and management strategies.

傳聞附件 2-4—105 學年度二技學生入學適用課程規劃案-企業管理系

## 二年制企業管理系(105 學年度課程規劃草案)

## (一)教育目標

系旨在配合國家教育目標、經濟情勢變遷、工商企業發展及本校中長期發展計畫，以連貫的課程規劃對學生施以密集的專業訓練，並陶冶其職業道德及服務精神，培育企業管理技術人才，使學生能擔任與企業人力資源、行銷、財務、生產、資訊有關之計畫、執行、控制等管理工作。

## (二)校定共同必修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
通識課程 General Education	4	2	2			
二技國文 Two-Year Program Chinese	2		2			國文(閱讀與寫作)(2) 抵修
二技英文 Freshman English	2		2			大一英文(2)抵修
英語聽講練習 103 English Listening & Speaking Practice 103	2	1	1			
英語聽講練習 104 English Listening & Speaking Practice 104	2	1	1			
生活服務教育 Student Life Service Education	0	0	0			
通識教育講座 Lectures on General Education	1					
合 計	11	3	7			



## (三)專業必修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
人力資源管理 Human Resource Management	3	3				
生產與作業管理 Production and Operation Management	3	3				
行銷管理 Marketing Management	3	3				
統計學(1) Statistics (1)	2	2				
會計學(1) Accounting (1)	3	3				
管理學 Management	3		3			
統計學(2) Statistics (2)	2		2			
財務管理 Financial Management	3		3			
資訊管理 Information Management	3			3		
策略管理 Strategic Management	3			3		
校外實習(1) Practice of Industrial Training(1)	2			2		
合 計	30	14	8	8		

## (四)專業選修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
統計學實習 (1) Practice of Business Statistics (1)	1	1				
企業應用軟體 Business Application Software	3	3				
心理學 Psychology	3	3				
金融市場 Financial Markets	3	3				
投資學 Investment	3	3				
零售管理 Retailing Management	3	3				
行銷研究 Marketing Research	3	3				
服務業行銷管理 Service Marketing Management	3	3				
組織發展 Organizational Development	3	3				
企業倫理 Business Ethics	3	3				
國際企業管理 International Business Management	3	3				
公司治理 Corporate Governance	3	3				
財務管理文獻導讀 A Guide to Reviewing Literatures of Financial Management	3	3				
風險管理 Risk Management	3	3				
企業財務分析 Financial Statement Analysis	3	3				
商務英語 Business English	3	3				
事件管理 Event Management	3	3				
統計學實習 (2) Practice of Business Statistics (2)	1		1			

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
技能證照專題 Special Topics on Skill Certificate	1		1			
人際關係 Interpersonal Relations	3		3			
中級會計學（1） Intermediate Accounting (1)	3		3			
組織行為 Organizational Behavior	3		3			
人事心理學 Personnel Psychology	3		3			
投資心理學 Investment Psychology	3		3			
企業研究方法 Business Research Methods	3		3			
品質管理 Quality Management	3		3			
行銷個案分析 Marketing Case Analysis	3		3			
創新管理 Innovation Management	3		3			
品牌管理 Brand Management	3		3			
成本會計 Cost Accounting	3		3			
企業融資決策 Corporate Financing Decisions	3		3			
顧客關係管理 Customer Relationship Management	3		3			
商業英文書報導讀 Journalism English Reading in Business	3		3			
電子商務與網路行銷 E-Commerce and Internet Marketing	3		3			
不動產經營管理 Real Estate Management	3		3			
會計資訊系統 Accounting Information System	3		3			
創業經營 Entrepreneurial Plan	3			3		

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
組織理論 Organizational Theory	3			3		
管理證照專題 Special Topics on professional Management Certifications	1			1		
中級會計學(2) Intermediate Accounting (2)	3			3		
銷售管理 Sales Management	3			3		
統計分析 Statistical Analysis	3			3		
消費者行為 Consumer Behavior	3			3		
非營利組織與管理 NonProfit Organization and Management				3		
人力資源管理個案研討 Case Study of Human Resource Management	3			3		
國際人力資源管理 International Human Resource Management	3			3		
衍生性金融商品 Financial Derivatives	3			3		
投資組合分析與管理 Investment Portfolio Analysis and Management	3			3		
決策分析 Decision Analysis	3			3		
物流管理 Logistics Management	3			3		
專案管理 Project Management	3			3		
整合行銷傳播 Integrated Marketing Communication	3			3		
策略性行銷管理 Strategic Marketing Management	3			3		
中小企業財務會計 Financial Accounting for Small and Medium Enterprises	3			3		

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
管理會計 Managerial Accounting	3			3		
金融業管理 Financial Institution Management	3			3		
領導學 Leadership	3				3	
管理個案研討 Case Study of Management	3				3	
科技管理 Management of Technology	3				3	
企業診斷 Business Diagnosis	3				3	
國際行銷管理 International Marketing Management	3				3	
企業評價 Business Valuation	3				3	
國際財務管理 International Financial Management	3				3	
財務管理個案研討 Case Study of Finance	3				3	
投資銀行 Investment Bank	3				3	
產業分析 Industrial Analysis	3				3	
人力資源制度設計 Human Resource System Design	3				3	
合 計	193	49	53	58	33	

## 一、必修科目 Required Courses

581001 人力資源管理	3 必	洪春吉, 上
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581001	Human Resource Management	3	R	C. J. Horng, F
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581002 生產與作業管理 3 必 廖世義, 上

581002 Production and Operation Management	3	R	S. Y. Liaw, F
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581003 行銷管理	3 必	沈慶龍, 上
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本課程主要在教導學生有關行銷功能的基本概念、理論及技術，以作為進階行銷課程的基礎。其主要授課內容包括：行銷在今日組織與社會之重要角色、透過品質、服務與價值以建立顧客之滿意、企業與事業部門之策略規劃、行銷管理程序與行銷規劃、行銷資訊系統與行銷研究、分析行銷環境、消費者市場及其購買行為、組織機構市場及其購買行為、產業與競爭者分析、市場之衡量與預測、市場之區隔與目標市場之選擇、差異化與市場定位之行銷策略、新產品之發展、測試與上市、產品生命週期行銷策略、市場領導者、挑戰者、跟隨者及利基者之行銷策略、全球性行銷策略、產品線、品牌與包裝之決策與管理、服務業與輔助性服務之管理、定價決策、行銷通路決策、零售、批發與實價分配系統之管理、行銷溝通與促銷組合決策、廣告計劃之擬定、銷售促進與公共關係、銷售人員之管理、行銷計劃之組織與執行、行銷績效之評估與控制。

581003 Marketing Management	3	R	C. L. Shen, F
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networks and marketing channels, Managing retailing, wholesaling, and market logistics, Managing integrated marketing communications, Managing advertising, sales promotion, public relations, and direct marketing, Managing the sales force, Managing the total marketing effort.

581004 統計學(1)	1	必	鄭文英, 上
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統計實習介紹商管科系同學關於統計學的基本應用，包括結合機率推論的資料抽樣設計與資料分析，及基本統計軟體使用。

582004	Practice of Business Statistics(1)	1	R	W. Y. Cheng, F
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The practice of business statistics is an introduction to statistics for students of business and economics that is based on data analysis and the design of data production join probability-based inference accompanied by computer software as major content areas.

## 581005會計學(1) 3必 許文西,上

本課程之目標在於使學生瞭解財務會計及財務報表之重要性，目標在使學生瞭解會計報表之內涵及其分析方法，並瞭解如何運用財務報表進行企業決策。主要內容包括會計報表與企業決策、投資、融資決策與資產負債表、營運決策與損益表、調整程序、會計科目之闡釋與報告以及財務報表分析等。

## 581005 Accounting(1) 3 R W. H. Hsu, F

The goals of this course are as follows: 1.To introduce to the students the importance of financial accounting and financial statements. 2.To help students learn how the investing, financing and operating decisions are reflected in the financial statements. 3.To help students understand how to apply these statements to business decisions. The major contents include financial statements and business decisions, investing and financing decisions and the balance sheet, operating decisions and the income statement, the adjustment process, reporting and interpreting assets, liabilities, sales, costs, owners' equity and financial statements analysis.

581006 管理學	3	必	蔡展維, 下
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本課程主要在講述『管理』的基本概念及理論，藉由經實證研究而歸納出之管理原則及方法的介紹，期使學生對管理能有整體的概念並實際運用的能力。課程內容包括下列課題：管理的重要性、管理基本理論、決策、策略規劃、組織原理與設計、人力資源管理、控制原理、生產與作業管理。

## 581006 Management 3 R C. W. Tsai, S

The primary purpose of this course is to introduce fundamentals of management. Principles and methods of effective management, which have been empirically validated, will be discussed to help students to gain a thorough understanding of management and to use learned managerial skills to solve real world problems. The following topics will be covered: managerial concepts, strategic planning, decision making, human resources management, fundamentals of control, production and operation management. 581007統

計學實習(2) 1 必 鄭文英, 下

統計實習介紹商管科系同學關於統計學的基本應用，包括結合機率推論的資料抽樣設計與資料分析，及基本統計軟體使用。

581007	Practice of Business Statistics (2)	1	R	W. Y. Cheng, S
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The practice of business statistics is an introduction to statistics for students of business and economics that is based on data analysis and the design of data production join probability-based inference accompanied by computer software as major content areas.

## 581008 財務管理 3 必 葉憲弘, 下

本課程旨在介紹財務管理之基本概念與理論及相關之實務專業技能，課程內容包括財務管理概

論、金融環境、風險與報酬之分析、貨幣時間價值、證券之評價、資金成本、資本預算、資本結構、股利政策、融資決策、營運資金管理等主題。

**581008 Financial Management                      3    R                      H. H. Yeh, S**

The main objective of the course is to introduce the students the basic concepts and theory of finance and related technique in practice. The content includes the overview of the basic financial concepts, the financial environment, risk and return analysis, time value of money, security valuation, cost of capital, capital budgeting, capital structure, dividend policy, financing decision, and working capital management.

**581009 資訊管理    3    必    廖世義, 上**

管理資訊系統是電子化企業競爭力的策略核心，本課程旨在介紹資訊在企業經營中所扮演的角色及應用，並探討企業資訊的有效管理原則與方法。課程內容包括以下主題如：了解資訊及知識的意義和特性、管理資訊系統的需求和應用、資訊系統的組織、規劃及控制、和資訊人員的領導與激勵等。並從管理的觀點討論資訊技術的互動理論與資訊組織的相關議題，最後，也經由實務個案說明網路經濟與電子化企業新資訊技術之衝擊，以強化本程之教學目標。

**581009 Information Management                      3    R    S. Y. Liaw, F**

Management information system is the strategic core competence of e-business. The purpose of this course is to introduce the role of MIS and its applications. Principle of MIS and system design methodologies are also discussed. Course contents include understanding the meaning and characteristics of information and knowledge, the needs and applications of the MIS, the Organizations, planning and controlling of the MIS. And, related topics with managerial overview of MIS are introduced by the interactive theory of IT and organization. Finally, in order to achieving the objectives of this course, the impacts of network economy and new IT of e-business are also discussed through empirical study cases.

**581010 策略管理    3    必    沈慶龍, 上**

本課程的目的，將給予學生一充分的了解，以確認和運用組織策略所需的正確分析技術和技能。因為，主要授課的內容將包括：策略性管理程序、利害關係人與公司使命、外部分析：確認產業的機會與威脅、內部分析：資源、潛能、能力與競爭優勢、由功能層級策略建立競爭優勢、事業層級策略、競爭策略與產業環境、全球環境下的競爭策略、公司層級策略垂直整合、多角化及策略聯盟、企業發展創立與重整企業、組織結構的設計、策略控制系統的設計、組織、控制與策略的配合、策略性變革的實施。

**581010 Strategic Management                      3    R    C. L. Shen, F**

The aim of this course is to give learners a thorough understanding of the analytical techniques and skills necessary to identify and exploit organization strategies successfully. Thus, the major subjects of this course will cover: The strategic management process, Corporate stakeholders and mission, External analysis: the identification of opportunities & threats, Internal analysis: resources、capabilities、competencies & competitive advantages, Building competitive advantage through functional-level strategies, Business-Level strategy, Competitive strategy and the industry environment, Strategy in the global environment, Corporate Strategy-vertical integration, diversification, and strategic alliances, Building and restructuring the corporation, Designing organizational structure, Designing strategic control systems, Matching structure and control to strategy, Implementing strategic change.

**581011 校外實習(1)    2    必**

為強化學生專業能力，使能理論與實務相結合，特開設此課程。修課學生得選擇本課程所擇定之廠商或研究機構於暑假期間前往實習。

**581011 Practice of Industrial                      2    R, F  
Training(1)**

This course is designed to strengthen students' professional capability by combining theoretical and practical aspects. Students taking this course are required to do a summer internship in a selected company or research institute.

**581012 實務專題 2 必**

本課程在訓練學生運用適當之研究方法完成專題計畫。學生將以團隊合作方式進行資料蒐集、分析、論文撰寫、與專題發表。

**581012 Special Projects 2 R, F**

This course provides assistance for grouped students to complete their research project.

**一? 二. 選修科目 Elective Courses****581013 統計學實習(1) 1 選 鄭文英, 上**

統計實習介紹商管科系同學關於統計學的基本應用, 包括結合機率推論的資料抽樣設計與資料分析, 及基本統計軟體使用。

**581013 Practice of Business Statistics(1) 1 E W. Y. Cheng, F**

The practice of business statistics is an introduction to statistics for students of business and economics that is based on data analysis and the design of data production join probability-based inference accompanied by computer software as major content areas.

**581014 企業應用軟體 3 選 廖世義, 上**

電腦之應用科學是令人感到興趣且發展迅速的領域之一, 現已被 廣泛應用政府、工商業、藝術、教育、研究及服務業等方面。本課程講授重點以商業應用軟體為主, 包含資料庫設計與操作、試算表製作與計算、統計分析與圖表製作、文書編輯與排版及多媒體製作等之應用。

**581014 Business Application Software 3E SS. Y. Liaw, F**

The application of computer has extended from simple number crunching to administration processes、industry、art、education、research and public services. The objective of the course is to teach the operation techniques concentrated on current business computer software packages; including database design and operation, spread sheets, statistic analysis and charts design、word processing and multi-media design.

**581015 心理學 3 選 林鈺琴, 上**

心理學乃是一門以心理學的角度來探討組織中, 各個人力資源管制度對員工心理及行為的影響。本課程目標主要讓學習者了解員工在各種不同的人力資源管理制度下, 會有何種心理反應, 並進而改善其工作行為, 以達到最高的生產力。

**581015 Psychology 3 E C. C. Lin, F**

The psychology of human resources management is a very important subject in the environment of organizational management setting. However, many teachers do not take this topic as an individual program in the classes design. The present class in to make up this shortcoming in order to offering the wider vision to learners. Through the learning, the students will more clearly understand the psychological operations of employee in the system of organizational management practices.

**581016 金融市場 3 選 葉憲弘, 上**

本課程旨在使學生了解、熟悉金融市場之體系與各項金融工具及其交易實務等有關之知識。本課程內容包括金融市場概論, 金融體系, 資本市場, 貨幣市場, 外匯市場, 期貨及選擇權市場。

**581016 Financial Markets 3 E H. H. Yeh, F**

The main objective of the course is to make the students understand and become familiar with the system of the financial markets, and its financial instruments and related knowledge in theory and practice. The course includes the introduction of the financial markets, the system of financial markets, capital

market, money markets, foreign Exchange market and futures and options markets..

### 581017 投資學 3 選 張宮熊, 上

本課程在介紹投資觀念，討論各種投資工具的特質，資本市場結構與理論，指數代風險的估測與報酬間的關係。基本分析部份是探討公司獲利能力，競爭力、財務流動能力、管理能力、本益比與未來的估測。技術分析則介紹市場分析各種採用分析方法並就投資組合分析理論來探討投資的選擇與風險的分散。

### 581017 Investment 3 E K. H. Chang, F

The course introduces the investment concepts, the characteristics of each investment instruments in the market, the theory and structure of capital market, market indicators, and risk estimation and its relationship with return. In the fundamental analysis, we discuss the profit-ability, competitiveness, financial liquidity, capital structure, management ability, price-earnings ratio and its future estimates for a firm. In the technical analysis, we introduce the various methods of the market analysis. Besides, the investment portfolio theory is introduced for the asset selection and risk diversification.

### 581018 零售管理 3 選 沈慶龍, 上

本課程旨在使學生獲得零售管理之理論及實務之相關知識。內容包括：零售的本質與發展、今日的零售業、零售環境、零售型態、零售策略、消費者的心理因素、消費者行為、商店的位置、商店設計、零售業的人力資源管理、零售業員工的領導統御、商品計劃、商品的管理及控制、零售訂價、零售採購、零售服務、零售業的推廣活動、零售業的廣告、零售展示、商店人力銷售。

### 581018 Retailing Management 3 E C. L. Shen, F

The objective of this course is designed to teach the related Knowledge of the theory and practice of Retail Management The main subjects are summarized as follows: The Nature of Development of Retail, Present Retailer, Retail Environment, Retail Type, Retail Strategies, The Psychological Factor of Consumer, Consumer Behavior, The Location of Shop, The Design of Shop, Human Resource Management of Retailer, Leadership of Retailer, Product Planning, Product Management and Control, Retail Pricing, Retail Purchasing, Retail Service, Retail Promotion, Retail Advertisement, Retail Display, Retail Personal Selling.

### 581019 行銷研究 3 選 沈慶龍, 上

本課程主要目的在教導學生，如何利用行銷研究的技術來蒐集和皆析所而的各種資訊，以應付行銷決策上的需要。主要授課內容綱要如下：行銷研究與行銷管理、行銷研究的發展、行銷資訊的價值、行銷資訊系統、科學方法、研究設計、行銷研究的程序、次級資料、收集資料的方法、無反應偏差的問題、問卷設計、實驗設計、抽樣方法、樣本大小的決定、態度的衡量、現場作業的管理、投射技術、深度技術、資料分析的程序、統計顯著性檢定、多變量分析、研究報告。

### 581019 Marketing Research 3 E C. L. Shen, F

The objective of this course is designed to teach the students how to use the technology of marketing research to collect and analyze the needed information for the purpose of marketing decision-making. The major subjects are summarized as follows: Marketing Research & Marketing Management. Knowledge development of Marketing Research. Value of marketing information. Marketing information system. Scientific methodology. Research design. Marketing research process. Secondary data. Survey method. Nonresponse bias. Questionnaire design. Experimentation. Sampling design. Sample size. Measurement. Field operation. Projection. In-depth group interview. The process of data analysis. Hypothesis testing. Multivariate analysis. Presenting report: written & oral report.

### 581020 服務業行銷管理 3 選 陳啟政, 上

本課程之目的，在教導學生在服務行銷規劃與執行相關理論與實務作為上的了解，以達到服務品質與生產力之增進。課程主要內容涵蓋：服務與服務品質的定義、顧客行為、服務的理論架構、價值傳遞的規劃管理與科技、服務業的人員管理、服務行銷之執行與績效評估。

### 581020 Service Marketing Management 3E C. C. Chen, F

This course seeks to provide basic understanding on the definition of services, customer behaviors,



service-related theories and frameworks, planning and managing value delivery system, technology and service design, managing service personnel, and executing service marketing and performance evaluation.

### 581021 組織發展 3 選 謝惠元, 上

本課程目的在於使學生了解有關組織發展與組織創新相關課題的理論與實務。課程範圍包含組織變革、計劃性變革、策略變革、科技及結構變革、人力資源變革、行為程序變革。

### 581021 Organizational Development 3 E H. Y. Hsieh, F

This course introduces organizational development, planned change, strategic change, techno-structural change, human resources change, human process changes. The program also includes theory and practices of organizational development.

### 581022 企業倫理 3 選 謝惠元, 上

在當今企業的經營環境中，企業倫理的議題較諸以往更加顯示其重要。現今，員工與顧客皆將企業倫理視為首要議題；因此，我們不能忽視這一個重要議題。另一方面，因為企業倫理所牽涉到的課題相當廣泛，我們將從以下幾個主要方向加以討論：基本理論介紹、職業與工作倫理、管理倫理、環境倫理、社區倫理、產品及服務倫理、行銷倫理、資訊管理倫理。

### 581022 Business Ethics 3 E H. Y. Hsieh, F

Business Ethics is more important in the present environment than before. Employees and customers see business ethics as the most important in the management process. We can not ignore this issue in contemporary management. Business ethics relate to many issues and the program includes following topic: Introduction of the theory of business ethics, Work ethics, management ethics, environment ethics, community ethics, product and service ethics, marketing ethics, information management ethics.

### 581023 國際企業管理 3 選 蔡展維, 上

本課程主要在教導與探討有關國際企業管理相關的學理與課題，期使選修同學對多國籍企業有更進一步的認識。課程範圍包含國際環境分析，國際策略，國際組織設計，與國際人力資源管理等議題。

### 581023 International Business Management 3 E C. W. Tsai, F

The main purpose of this course is discussing and comprehending the related knowledge and issues about International Business Management. The major contents will cover : Diamond Model, International Strategy , Design of International Organization and International Human Resource Management . Through this course, the students will have more clear understanding about the truth of Multinational Corporations(MNCs).

### 581024 公司治理 3 選 許文西, 上

公司治理概念一般泛指公司管理與監控的方法。公司治理運作不上軌道，是企業無法提昇國際競爭力之關鍵因素之一。2001 年美國恩龍案（Enron）後陸續引發的金融危機，更突顯公司治理的重要性。本課程首先研討公司治理的機制以及其重要性，具有優良的公司治理機制的企業，能為股東製造更高的獲利機會，在面對金融危機時，亦較具競爭力及應變能力。繼而深入探討會計資訊在公司治理機制中扮演的角色，以及相關的研究。

### 581024 Corporate Governance 3 E W. H. Hsu, F

The main purpose of this course is to provide the students with in-depth understanding of the role of publicly reported financial accounting information in the governance processes of corporations. The first part focuses on the issue of corporate governance, which encompasses the internal policies and practices by which a company is operated and controlled on behalf of its shareholders. The advantages of sound corporate governance are discussed as well as a good system of corporate governance that helps maintain the confidence of investors, which allows companies to raise capital efficiently. The second part concentrates on the research that examines the role of accounting information in specific governance mechanisms.

### 581025 財務管理文獻導讀 3 選 葉憲弘, 上

本課程主要在教導與研討有關財務管理文獻相關的學理與實務主題，使選修同學瞭解有關財務管理文獻與機構領域中學術與實務的現況與發展。

**581025 A Guide to Reviewing Literatures 3 E K. H. Chang, F**  
**of Financial Management**

The main purpose of this course is discussing and comprehending topics in Literatures on Financial Management. The issues include theoretical discuss and practical application. Through this course, the students will have more clearly understanding the practical application and development of Literatures on Financial Management for financial products and institutions.

**581026 風險管理 3 選 張宮熊, 上**

本課程旨在協助同學瞭解風險管理基本原理及概念以及能運用風險管理工具進行風險管理。課程內容包括風險管理之意義及類別、金融災難與其啟示、風險個論、風險值以及風險管理系統之應用等。

**581026 Risk Management 3 E K. H. Chang, F**

The purposes of this course are to help students with better understandings of the principles and concepts of risk management and to help students to proceed to the risk management by using the risk management tools. The contents include the introduction of risk management, financial disasters and their implications, Value at Risk and the application of risk management system.

**581027 企業財務分析 3 選 許文西, 上**

本課程主要在教導與分析有關企業財務報表相關的實務，主要的課程包含：企業財報與分析，企業營業活動分析，投資活動分析，融資活動分析，現金流量分析及獲利性分析等，使選修同學瞭解有關企業財務報表實務並具備分析公司財務報表之能力。

**581027 Financial Statement Analysis 3 E W. H. Hsu, F**

The main purpose of this course is to provide students a comprehensive understanding of financial statement analysis. Main topics included in the course are: financial reporting and analysis, analyzing financing activities, analyzing investing Activities, analyzing operating activities, cash flow analysis, profitability analysis, credit Analysis. By completing this course, students will have an ability to analyze financial statements provided by companies.

**581028 商務英語 3 選 廖世義, 上**

基於在商務知識和生活上的實際需要，本課程目的在培養學生商業英文寫作與會話之能力及技巧。課程內容將針對學生之語言及目標需求而定，但內容之基本架構會以國際貿易之一般程序為主，以期提供一模擬真實情境，讓學生學習如何以英文來做商業上的溝通。強調學生利用已有之英語文知識在日常生活英語的需求上。課程內容包含：社交、商用書信、Memo、廣告、新聞及餐旅英語、表格填寫、謀識技巧、契約、交通、工作場所用語與訪談技巧。為了鼓勵修課學生的積極參與，課程要求包括：專書閱讀、課程討論與個案討論。

**581028 Business English 3 E S. Y. Liaw, F**

Based on practical needs of business knowledge and life, this course designed enables learners to acquire both the language competence and skills in writing and oral business communication that are normally seen in a business environment. Both learners' language needs and target situation needs will be taken into account in making the decision for the class content. However, the framework will be set upon the regular process of the international trades and try to simulate a real-world situation for learners to get a general idea about how to use the language acquired to conduct the business. Then apply it on learners' daily needs! A trip on this course will take you to the English most pertinent to learners' needs. Itinerary includes: friendly & business letters, memo, Ads, news English, English for hotel & travel, forms, job-seeking techniques, interviews, contracts, highway travel words. A trip will make you as functional as you could be. To encourage regular feedback, course requirements include book review,



class participation and discussion, and case study.

### 581029 事件管理 3 選 賴鳳儀, 上

本課程設計著重在介紹學生對於特殊事件(如節慶、運動、藝術、觀光、娛樂、慈善)與會議展覽在營利與非營利機構運用之概念, 以及在事件規劃之專案管理能力。

### 581029 Event Management 3 E F. Y. Lai, F

This course emphasizes the development of project management skills for students who may become involved in special event management through festival, sport, art, tourism, entertainment, charitable or marketing organizations in a professional or volunteer capacity. On successful completion of this course, students are able to practice marketing and management skills to various special events.

### 581030 統計學實習(2) 1 選 鄭文英, 下

統計實習介紹商管科系同學關於統計學的基本應用, 包括結合機率推論的資料抽樣設計與資料分析, 及基本統計軟體使用。

### 581030 Practice of Business Statistics (2) 1 E W. Y. Cheng, S

The practice of business statistics is an introduction to statistics for students of business and economics that is based on data analysis and the design of data production join probability-based inference accompanied by computer software as major content areas.

### 581031 技能證照專題 1 選 廖世義、謝惠元, 下

本課程提供學生在國內、外管理技能證照方面之學習、取得、與實務運用之訓練課程。在知識經濟時代, 專業技能如何衡量(Measurable)與提高其可見度(Visible)是學生在職場上競爭之利器, 尤其管理知識技能多屬於內隱知識(Tacit)較不易衡量, 透過認證之取得確可看出其學習之成效與程度, 並提供學習之路徑(Road map)與方向, 學生可隨著各學程的相關證照設定目標, 朝各種不同等級的證照努力, 有方向可供遵循。管理技能證照可分財務金融技能、行銷管理技能、作業管理技能、與一般管理技能等四個學程有關技能認證的課程與實務, 對學生專業知識技能的專精、證照之取得、與實務運用之訓練與教學, 期能幫助學生將專業知識技能轉換成顯性(Explicit)可見度高之技能證照資格, 並能實際應用於實務, 這也是目前產業聘用人才之依據, 強調實務且易衡量之資格, 作為用人之重要參考。惟認證係實際技能能力之檢定, 涉及認證實務, 在認證方面有一定之科目與規則, 因此必須有計畫之教學並輔以實習訓練, 期能以實務之運用為主讓證照所表徵之專業知識技能與程度能實際發揮於實務工作上, 如電腦程式設計、語言、中英打、電腦軟體、繪圖、記帳士等專業技能。有關之實務課程內容包括介紹資格評估之標準、評估之專業知識技能、資格取得過程、評估之單位、應研習之科目、技能模擬演練、實際企業之分析等。本課程有計畫且具體的將學生由隱性知識技能提升為顯性資格證照認證, 以提升其將來就業之競爭力, 是各管理學程不可或缺之橋接課程(Bridge program)。

### 581031 Special Topics on Skill Certificate 1 E S.Y. Liaw & H. Y. Hsieh, S

This program provides training and learning for students to acquire the qualification of professional international or Taiwan skill certificates. In knowledge economy era, profession and skill measure and visibility is growing more important for students' competition in human resources market. Especially management skill is more inclined to tacit knowledge difficult to measure. The qualification certificating not lonely facilitates measure and visibility of the skill competence of students' learning but also shows a clear direction of learning rendered as a road map. Student can set up his or her own goals and follow the program step by step to achieve different stages' skill assessment. Management skill certificate program includes teaching and intern courses of financial and banking, marketing, operation research, general management skill programs in order to focus and penetrate student' s profession skill, acquire certificate and participate practices. The objective of the program is to transform implicit profession management skill to explicit and visible certificates, highly consistent with business practices which are most important factors for business recruiting or promotion. However there are rule and requirements of certificating relating more to real business practices, therefore planned training

and teaching is crucial to success. This course includes introduction of the standards and requirements of qualification, profession skill required, the process and stage of the certification, assessment authority, required completion of subjects, simulation, rehearsal, case study, and game exercises. This is a planned and substantial bridge program to transform student's tacit skill to explicit qualification which is significant to the success of the students in the future and even his or her long-term career.

### 581032 人際關係

3 選

林鈺琴, 下

組織中的人際關係，在現在的社會中，越來越重要，也一直是組織管理學者所著重的領域之一。本課程包含以下幾個主要課目：人際關係概論、團隊管理技巧、組織中之人際關係本質、工作情緒管理、溝通技巧、組織氣候與文化、協調技巧、人際關係的實務設計、衝突管理、敏感性分析、群體動力學、專題討論。

### 581032 Interpersonal Relations

3 E

C. C. Lin, S

The key purpose of this course is to help students learning academic concepts, knowledge, and practical skills of human relations in workplace. The teaching methods in this course will include teacher's instruction, interactive discussion, case study, and business professionals' speech of specific subjects. The subjects in this course may include the following issues: foundations of human relations, theories of interpersonal communication, methods and process of communication, interpersonal influence, interpersonal conflict, building and maintenance of human relations, negotiation and group interactions, communication and relations in organizations.

### 581033 中級會計學(1)

3 選

許文西, 下

本課程係初級會計學的延伸，主要課程包括會計環境與理論的概述，財務報表剖析，租賃會計處理，退休金會計處理，所得稅會計處理，現金流量表等。各章節除教授課程外，另注重實例解析以及相對應的財務會計準則公報比較。以我國財務會計準則公報為主，輔以國外會計準則介紹，深入探討會計的各項主題，並配合範例與習作，使學生能靈活運用所學。

### 581033 Intermediate Accounting(1)

3 E

W. H. Hsu, S

The main purpose of this course is to help students understand recent issues in the field of intermediate accounting. Major topics covered in this course include: the environment of financial reporting, conceptual framework of financial reporting, the development of the framework of accounting theory, the balance sheet and the statement of changes in stockholders' equity, the income statement and statement of cash flows, as well as additional aspects of financial reporting and financial analysis.

### 581034 組織行為

3 選

洪春吉, 下

本課程旨在使學生獲得組織行為課程之相關知識。內容包括：個體行為、群體行為、組織系統、組織動態。

### 581034 Organizational Behavior

3 E

C. J. Horng, S

The main subjects are summarized as follows: individual behavior, group behavior, organization system, organizational dynamics.

### 581035 人事心理學

3 選

林鈺琴, 下

人事心理學乃是一門以心理學的角度來探討組織中，各個人力資源管理制度對員工心理及行為的影響。本課程目標主要是讓學習者了解員工在各種不同的人力資源管理制度下，會有何種心理反應，並進而改善其工作行為，以達到最高的生產力。本課程包含以下幾個主要範圍：組織工作心理及行為概論、選任制度對員工的影響、薪資制度對員工的影響、福利制度對員工的影響、考績制度對員工的影響、訓練制度對員工的影響、異動制度對員工的影響、實務專題討論。

### 581035 Personnel Psychology

3 E

C. C. Lin, S

The psychology of human resources management is a very important subject in the environment of organizational management setting. However, many teachers do not take this topic as an individual program in the classes design. The present class in to make up this shortcoming in order to offering the wider vision to learners. Through the learning, the students will more clearly understand the psychological operations of employee in the system of organizational management practices. The content of this class

will include the behaviors and psychological reaction of employee when he/she encounters with the decision and implement of human resource management. The subjects will conclude the psychological and behavioral problems from selecting, rewarding, appraisal, turnover, and other personnel functions. We hope through the interactive discussion to give the students more knowledge about the psychological side of human resource management.

### 581036 投資心理學 3 選 張宮熊，下

本課程主要在教導與研討有關投資心理學相關的學理，如展望理論、處份效果、過度自信、心理帳戶等與相關的實務主題，使選修同學瞭解有關投資心理學領域中學術與實務的現況與發展。

### 581036 Investment Psychology 3 E K. H. Chang, S

The main purpose of this course is discussing and comprehending topics in investment psychology, likes prospect theory, disposition effect, overconfidence effect, mental accounting. The issues include theoretical discuss and practical application. Through this course, the students will have more clearly understanding the practical application and development of investment psychology.

### 581037 企業研究方法 3 選 沈慶龍, 下

企業面對之經營環境日趨複雜，所遭遇之經營問題已無法藉助於過去的經驗或直覺。而企業研究方法的主要內涵，即在協助研究計劃執行者、專業經理人、以及管理者，能以科學研究的方法，解決企業經營管理上的各種問題。因此，本課程擬從實務應用的途徑，讓學生對企業研究方法有一全盤的認識。主要之教學內容將涵蓋下列之主題：企業研究導論、研究設計、資料收集方法、衡量的概念、抽樣與現場作業管理、資料分析與解釋、研究報告。

### 581037 Business Research Methods 3 E C. L. Shen, S

This course will emphasize an applied approach based on practical applications that give students a basic understanding of the scope of business research. To introduce the students to the basic tools of business research by explaining the various research methodologies and techniques, the main teaching contents will cover the following subjects :1.Introduction to business research 2.Research design 3.Data-collection methods 4.Measurement concepts 5.Sampling and fieldwork 6.Data analysis and presentation 7.Research reports.

### 581038 品質管理 3 選 陳啟政, 下

此課程之目的在於培養學生在未來的環境中管理上的準備，課程亦著重理論與實務並重並配合廠商的參觀。內容主要包括下列三部份：顧客價值策略---顧客價值是綜合顧客使用產品或服務的利益以及一些必須犧牲的不便。其策略是公司計劃提供顧客的價值包括產品或服務的特性，功能，交貨或售後服務。組織的系統---組織的系統即為提供顧客價值的一些方法與工具，包括公司的功能以及部門的操作。持續改善---為了要趕上外在環境改變的速度，公司必須改變他們的組織，以持續努力來學習，變化及使事物做的更好，更完美。

### 581038 Quality Management 3 E C. C. Chen, S

The purpose of this course is to prepare student for Management in the coming decades. The class will focus on both of philosophies and practices using case studies and factory visiting. It covers the three main themes : Customer Value Strategy--customer value defined as a combination of benefits derived from using a product or service and the sacrifices required of the customer. The customer value to customers, including products/services, characteristics, mode of delivery, support services etc. Organizational Systems--the management of Organizational Systems are means that provide customer value, including functional and departmental practice. Continuous improvement--To keep pace with the changes in the external environment, companies have to change their organizations for constantly striving to learn, change and make things better.

### 581039 行銷個案分析 3 選 賴鳳儀, 下

本課程主要目的在於透過教師授課與師生互動方式進行行銷案例的分析與討論理解行銷在實務上的運用。課中著重在培養學生透過國內外行銷成功與失敗案例經驗累積思考、判斷、分析企業實務能力。



**581039 Marketing Case Analysis                      3     E                      F. Y. Lai, S**

The main purpose of this course is through interactive teaching of marketing cases to understand the application of marketing concepts. It emphasizes on examining marketing success and failure cases to cultivate students' abilities on critical thinking, judgment, and analyses in business practices.

**581040 創新管理    3     選    謝惠元, 下**

本課程主要目的在介紹創新管理與研究發展之相關議題主要內容包括創新的價值、創意的來源、創意的篩選、創意的具體化、創新的流程與模式、創新的商業化、新產品研究發展之相關課題。希望透過課程之介紹,使得學生對創新及創意有具體之認識,並透過個案分析以培養訓練學生落實創新及創意的概念及想法,以提升競爭力。為了鼓勵修課學生的積極參與,課程要求包括:專書閱讀、課程討論與個案討論等。

**581040 Innovation Management                      3     E    H. Y. Hsieh , S**

The purpose of this course is to introduce some topics in innovation management and R&D management. Course contents include value of innovation, idea generating, idea screening, concept development and testing, procedure and model of innovation, the commercialization of innovation, case study in innovation management, and relevant topics in R&D management. To encourage regular feedback, course requirements include book review, class participation and discussion, and case analysis, etc.

**581041 品牌管理    3     選    蔡展維, 下**

本課程將提供學習者,有關品牌管理上,一兼具理論與實務的充分了解,。因此,授課內容主要將包括下列的主題:概論、品牌的挑戰、品牌建立決策、品牌提供決策、品牌名稱決策、品牌建立的工具、品牌建立的行銷計畫、品牌權益、品牌生命週期的品牌權益管理策略,品牌策略之決策,品牌延伸,側翼品牌,品牌稽核. 品牌重定位。

**581041 Brand Management                              3     E    C. W. Tsai, S**

This course will provide students the related theories and practices of Brand Management. The major subjects of this course are summarized. as following: Introduction, Branding challenges, Branding decision, Brand sponsor decision, Brand name decision, Brand building tools, Marketing plan for building brand, Brand strategy decision, Brand extensions, flanker brand, Brand auditing, Brand reposition.

**581042 成本會計    3     選    許文西, 下**

本課程主要在探討各種成本認定,衡量彙集的方法,及如何運用成本分析方法來作決策。課程內容主要包括:成本會計之角色與功能、成本概念與成本會計資訊系統、成本習性分析、成本制度與成本彙集、分批成本法、分步成本法、品質成本及生產損失之會計處理、副產品與聯產品之成本計算、材料:控制、成本計算與規劃、及時系統及倒流式成本法、人工:成本之控制與會計處理、製造費用:規劃、實際與分攤、製造費用:部門化、作業基礎會計制劃、預算:利潤、銷售、成本與費用、預算:資本支出、研發支出與現金、責任會計與報告、標準成本制、直接成本法與成本-數量-利潤分析、差異成本分析、資本支出之規劃、資本支出之經濟評估、不確定環境下之決策制定、行銷費用與獲利力分析、績效評估與內部轉撥價格。

**581042 Cost Accounting                                      3     E    W. H. Hsu, S**

The theme of this course is designed to provide the necessary background for those students who want to be an accountant or for those who will use the account information in their career jobs. Not only is the system of collecting, ordaining, processing, and reporting economic data presented but the use of accounting information in decision making is emphasize as well. The organization of teaching materials will be designed to provide maximum flexibility in meeting different course objectives. The main subjects will cover: Management, the Controller, and Cost Accounting. Cost Concepts and the Cost Accounting Information System. Cost Behavior Analysis. Cost Systems and Cost Accumulation. Job Order Costing. Process Costing. The Cost of Quality and Accounting for Production Losses. Costing By-Products and Joint Products. Materials: Controlling, Costing, and Planning. Just-in-Time and Backflushing. Labor: Controlling and Accounting for Costs. Factory Overhead: Planned, Actual, and Applied. Factory Overhead:

Departmentalization. Activity Accounting: Activity-Based Costing and Activity-Based Management. Budgeting: Profits, Sales, Costs, and Expenses. Budgeting: Capital Expenditures, Research and Development Expenditure, and Cash: PERT/Cost. Responsibility Accounting and Reporting. Standard Costing: Incorporating Standards into the Accounting Records. Direct Costing, CVP Analysis, and the Theory of Constraints. Differential Cost Analysis. Planning for Capital Expenditures. Economic Evaluation of Capital Expenditures. Decision Making Under Uncertainty. Marketing Expense and Profitability Analysis. Profit Performance Measurements and Intracompany Transfer Pricing.

### 581043 企業融資決策

3 選

葉憲弘, 下

本課程之目的在於使學生熟悉企業融資之來源、方式與其特性，並介紹各種可能規避融資風險之方式，以確保融資決策的有效性，同時，利用個案研討，增進學生“學以致用”，並達到“理論與實務配合”之教育目標。本課程內容包括 1. 業融資需求預測 2. 短期融資來源 3. 長期融資來源 4. 特殊融資方式 5. 融資避險 6. 企業融資策略與規劃。

### 581043 Corporate Financing Decisions

3 E

H. H. Yeh, S

The purpose of the course is to make students further understand the alternative sources and types of corporate financing. Besides, the course introduces the possible risk eliminating approaches for corporate financing, which insures the effectiveness of the corporate financing decisions. Moreover, case study is also included during the course for the purpose of practical applications by the students. The course content includes financing needs forecasting, Short-term and Long-term financing sources, special alternatives for corporate financing, risk hedging for corporate financing and corporate financing strategy and planning.

### 581044 顧客關係管理

3 選

蔡展維, 下

本課程之主要在教導學生有關顧客關係管理相關的學理與概念，使其對關係行銷之概念有深入的認識與了解。主要授課內容將包括：關係行銷的範疇及概念，企業關係的資產與負債，服務業的關係行銷、買賣雙方關係的整合性模式，大眾市場的關係行銷，會員制顧客與關係行銷，全國性大型客戶管理，關係行銷的水平式聯盟，關係行銷與行銷策略，關係行銷的組織，資訊科技的應用與顧客獲利力。

### 581044 Customer Relationship Management

3 E

C. W. Tsai, S

The main purpose of this course is discussing and comprehending the related knowledge and issues about Customer Relationship Management. The main subjects are summarized Follows: the domain and conceptual Foundations of relationship marketing, the evolution of relationship marketing, relationship marketing of services, relationship marketing and distribution channels, an integrated model of buyer-seller relationships, strategic alliance, relationship marketing in mass markets, membership customers and relationship marketing, relationship marketing and key account management, horizontal alliances for relationship marketing and marketing strategy, organizing for relationship marketing, information technology, customer profitability.

### 581045 商業英文書報導讀

3 選

謝惠元, 下

本課程主要在培養學生具備商業英文書報專業閱讀之技能，經由了解商業英文與一般英語不同之文法結構及用字遣詞，透過本課程學習商業頭條新聞與商務詞彙，定期閱讀哈佛管理評論，NEWSWEEK, TIME 及讀者文摘，廣告雜誌等英文書報雜誌，一方面增加對瞬息萬變的現代國際社會的認識，跟上時代潮流、融入並成為國際村的一份子；另一方面提高學生的英文了解能力及學習興趣。並針對其做一一詳述閱讀分析文章的技巧，如版面元素、文章結構到閱讀技巧，循序漸進，紮實學習閱讀英語書報。促使本系學生除修習本身專業技能外，更能擴展國際商務秘書之能力，以提昇其就業的競爭能力。尤其著重於實際的習作，學生們經由實際的習作，以改進他們一般的英文錯誤，進而學得良好的英文閱讀技巧。

### 581045 Journalism English Reading in Business

3 E

H. Y. Hsieh, S

This course aims to acquaint students with the structural and stylistic characteristics of business journal in English, such as business newspaper headlines and commercial vocabulary of the media. With such acquaintance, on one hand, students are able to catch up with the changing business world, inform themselves with the latest business trends and knowledge developed, and become a member of the global society. On the other hand, students are also able to improve their knowledge of the language itself with the exposure to business news stories in English. Material used in class will be from Harvard Business Review, Newsweek, TIME, Reader's Digest, and advertisement magazines. Articles reading, structure analyzing, group discussion and listening activities are covered in the going of the class. Through practical repeated exercises in English reading, students then can improve their common errors in English and learn English reading skills.

### 581046 電子商務與網路行銷

3 選

廖世義, 下

本課程涵蓋部門間的數位化商業資訊之換資訊與媒體技術的相關性及企業內、組織間的商業活動。討論主題包含：企業與企業、企業與客戶、客戶與客戶、及客戶與企業間的商業模式、網路市場行銷與品牌塑造。經由網際網路和行動通訊技術的應用，行銷組合及電子化廣告已對傳統企業之商業行為及消費者行為產生相當大的衝擊。本課程主題包含資料、一對一線上行銷、無線通訊技術、一對一線上行銷、病毒行銷和網路購物。亦介紹幾種上網購物。亦介紹幾種線上網路廣告之型態、電子化採購和資料挖掘分析工具於客戶關係管理方面的應用等。最後也針對第三代行動商務對不同產業的創新服務進行個案教學與討論。

### 581046 E-Commerce and Internet Marketing

3 E

S. Y. Liaw, S

This course includes breadth of study in the exchange of digitized information between parties, technology-enabled transactions, technology-mediated relationships, and intra- and inter-organizational activities that support exchange. Discussed topics include B2B, B2C, C2C, C2B relationships, e-market communication and branding. Through Internet application and mobile communication technology, marketing mix and e-advertisement affect the traditional business behaviors of enterprises and consumers greatly. Among topics include database marketing, one-to-one on-line marketing, wireless communication technology, virus marketing and E-shopping. By the way, several patterns of on-line advertisement, E-purchasing, and analysis tools of data mining applied into custom relationship management are also introduced. Finally, innovative services of 3G mobile commerce and their impacts on diverse industries are discussed in our case studies.

### 581047 不動產經營管理

3 選

謝惠元, 下

不動產經營管理之目的是藉由對不動產之開發經營管理來創造不動產之最大利益，反應其應有價值。不動產具有不可移動性、稀少性、異質性、昂貴性、長久性、投資與消費雙重性等。投資者對不動產正確的認知不但可滿足消費需求，還可創造增值利潤。近年來「不動產證券化」已非常成熟，提供不動產經營與管理業者更具寬廣之發展空間。但不動產之流動性必須先透過良好之規劃與管理才能顯現其財務效益。因此本課程之目的是以策略之觀點來培養學生對不動產之認識並藉由對不動產經營與管理之學習來提升學生創造不動產價值之能力。尤其不動產深受外在環境與景氣循環週期等因素之影響，正與策略管理之外在環境分析相符。本課程以 SCP 理論從總體與個體角度分析不動產業，一、總體方面探討不動產業之外在影響因素(S)、產業行為(C)、產業績效(P)、產業效果(E)等，包括不動產之總體環境分析 (S1)、不動產市場分析、不動產與經濟、不動產景氣循環、不動產區域發展、不動產生命週期、不動產之定義(S2)、營建業價值鏈分析、建築業行為(C)與指標(Proxy)、理性與非理性行為、網絡行為、建築業績效與指標(P)、建築業之效果與指標(E)、不動產開發、不動產興建管理、住宅不動產管理、不動產管理計畫等。二、就個體角度而言，分析建築業之企業行為與績效，包括不動產公司之績效分析、策略、經營管理、行銷計畫、與不動產財務規劃等。



**581047 Real Estate Management                      3   E                      H. Y. Hsieh                      S**

Real estate management is to maximize value and profit of the property by development, operation and management. Real estate is characterized by immovability, scarcity, heterogeneity, pricey, longevity, dual purpose of investment and consumption. A correct perspective of real estate not only satisfies the demand of consumption but also creates incremental value to investor. Recently Real Estate Investment and Trusts (REITs) thrives in Taiwan providing a wider market for Real Estate Industry. However the value of real estate can only be realized by streamlined planning and management. The course's objective is to teach students a comprehensive and correct acknowledgement of real estate from a strategic perspective. In addition the course also trains students the ability to develop and manage real estate increasing the value of property. Real estate is influenced by external environment and economic cycle, same as External Environmental Analysis in Strategic Management. The course basing on SCP model analyzes real estate Industry from macro and micro perspectives. Firstly from macro perspective we study external factors influencing real estate industry (S), industry behavior (C), industry performance (P), and industry effect (E). The course contents include macro environmental analysis of real estate (S1), real estate market, real estate and economy, real estate cycle, regional development, real estate industry life cycle, definition of real estate (S2), value chain analysis, construction behavior and proxy (C), rational and irrational industrial behavior, construction network, construction performance and proxy (P), construction effects and proxy (E), real estate development, construction management, residential real estate management, real estate management plan. Secondly from micro perspective, we analyze individual construction companies' conducts and performances, including construction company's performance, strategy, management, marketing management, real estate financial planning.

**581048 會計資訊系統                      3   選                      許文西, 下**

本課程旨在介紹會計資訊系統及其實務上的應用。內容包括公開發行公司建立內部控制制度處理準則所規範的八大交易循環作為會計資訊系統實作演練的標的，透過不同交易循環之虛擬情境與操作介紹，引導學生操作系統，使學生能運用會計資訊系統並能將會計資訊加以應用以協助管理決策的制定。

**581048 Accounting Information System                      3   E                      W. H. Hsu, S**

This course is designed to develop students' understanding of the purpose and role of accounting information systems and controls within contemporary organizations. The course also explores, in detail, several typical accounting information application systems, such as revenue, payment, payroll, and production cycles. The primary objectives of this course are: (1) to develop an understanding of the flow and organization of data in automated environments; (2) to develop an understanding of internal controls in accounting systems; (3) To learn how technology changes the way data are collected, manipulated, reported, controlled, and audited.

**581049 創業經營                      3   選                      謝惠元, 上**

企業創業艱辛，尤其是科技人，若能給予良好優厚條件之環境及支援，則新創企業將得以快速安穩地成長，創業成功的機會也就大的多了。這門課的目的就是在介紹這創業育成相關的主題 Subject，議題 Issues 及內容 Contents，同時，將要求學生作創業及育成相關的觀察、研究、調查、面訪、統計、分析作專題報告。

**581049 Entrepreneurial Plan                      3   E                      H. Y. Hsieh, F**

The purpose of this course is to introduce Entrepreneurship, especially in high-technology industry. With high quality of human resource, to investment a venture in high technology would be hard and risky. It needs subjects related to strategies in Marketing Planning, R&D, Law and Finance, etc.

**581050 組織理論****3 選****蔡展維, 上**

本課程主要在教導與探討有關組織理論相關的學理與課題，期使選修同學對企業管理有更進一步的認識。課程範圍包含組織結構、組織設計、組織變化、與組織學習等議題。

**581050 Organizational Theory****3 E****C. W. Tsai, F**

The main purpose of this course is discussing and comprehending the related knowledge and issues about organizational theory. The major contents will cover : Organizational Structure, Organizational Design, Organizational Change and Organizational Learning. Through this course, the students will have more clear understanding about the development of management.

**581051 管理證照專題****1 選****廖世義、謝惠元, 上**

本課程提供學生在國內、外管理智能證照方面之學習、取得、與實務運用之訓練課程。在知識經濟時代，專業知識如何衡量(Measurable)與提高其可見度(Visible)是學生在職場上競爭之利器，尤其管理知識多屬於內隱知識(Tacit)較不易衡量，透過認證之取得確可看出其學習之成效與程度，並提供學習之路徑(Road map)與方向，學生可隨著各學程的相關證照設定目標，朝各種不同等級的證照努力，有方向可供遵循。管理證照可分財務金融、行銷管理、作業管理、與一般管理等四個學程有關認證的課程與實務，對學生專業知識的專精、證照之取得、與實務運用之訓練與教學，期能幫助學生將專業知識轉換成顯性(Explicit)可見度高之證照資格，並能實際應用於實務，這也是目前產業聘用人才之依據，強調實務且易衡量之資格，作為用人之重要參考。惟認證係實際能力之檢定，涉及認證實務，在認證方面有一定之科目與規則，因此必須有計畫之教學並輔以實習訓練，期能以實務之運用為主讓證照所表徵之專業知識與程度能實際發揮於實務工作上，如財務分析師、管理顧問、產業分析等。有關之實務課程內容包括介紹資格評估之標準、評估之專業知識、資格取得過程、評估之單位、應研習之科目、模擬演練、實際企業之分析等。本課程有計畫且具體的將學生由隱性知識提升為顯性資格證照認證，以提升其將來就業之競爭力，是各管理學程不可或缺之橋接課程(Bridge program)。

**581051 Special Topics on Professional Management Certificates**
**1 E****S.Y. Liaw & H.Y. Hsieh, F**

This program provides training and learning for students to acquire the qualification of professional international or Taiwan certificates. In knowledge economy era, profession measure and visibility is growing more important for students' competition in human resources market. Especially management knowledge is more inclined to tacit knowledge difficult to measure. The qualification certificating not lonely facilitates measure and visibility of the competence of students' learning but also shows a clear direction of learning rendered as a road map. Student can set up his or her own goals and follow the program step by step to achieve different stages' assessment. Management certificate program includes teaching and intern courses of financial and banking, marketing, operation research, general management programs in order to focus and penetrate student' s profession, acquire certificate and participate practices. The objective of the program is to transform implicit profession knowledge to explicit and visible certificates, highly consistent with business practices which are most important factors for business recruiting or promotion. However there are rule and requirements of certificating relating more to real business practices, therefore planned training and teaching is crucial to success. This course includes introduction of the standards and requirements of qualification, profession required, the process and stage of the certification, assessment authority, required completion of subjects, simulation, rehearsal, case study, and game exercises. This is a planned and substantial bridge program to transform student' s tacit knowledge to explicit qualification which is significant to the success of the students in the future and even his or her long-term career.

**581052 中級會計學(2)****3 選****許文西, 上**

本課程主要目的，在介紹學生有關中級會計中最近的理論與實務議題，經由本課程將使學生更加了解有關中級會計領域中最新發展的現況。

**581052 Intermediate Accounting(2)****3 E****W. H. Hsu, F**

The main purpose of this course is to introduce recent issues in Intermediate Accounting. The scope of

the course includes theoretical field and practical application. Through this course, the students will have more clear understanding to the development of Intermediate Accounting.

### 581053 銷售管理 3 選 沈慶龍, 上

本課程的目的，在教導學生有關銷售或行銷主管在銷售力策略的決策範疇，替代方案及其制定之準則。因此，主要的授課內容將包括：銷售管理與企業機構、銷售管理，人員推銷與推銷術、人員推銷的目標、劃定與推銷策略、劃定人員推銷策略、優秀的推銷主管、推銷組織、銷售組織的人事管理、業務員的招募、業務員的甄選、銷售訓練的規則、銷售訓練之執行與績效評估、業務員的激勵、業務員薪資、銷售費用之管理、銷售會議與銷售競賽、業務員的控制、銷售預算、銷售配額、銷售區域的規劃、銷售控制與成本分析、國際銷售管理、個案研討。

### 581053 Sales Management 3 E C. L. Shen, F

This course is aimed toward accomplishing three objectives: (1) to delineate the areas in which sales executives make decisions; (2) to analyze decision alternatives and criteria in these areas; and (3) to provide cases as real-world illustration of decision situations. The major subjects will cover: Sales management and the business enterprise, Sales management, personal selling, and salesmanship, Setting personal-selling objectives, Determining sales-related marketing policies, Formulating personal-selling strategy, The effective sales executive, The sales organization, Personal management in the selling field, Recruiting sales personnel, Planning sales training programs, Executing and evaluating sales training programs, Motivating sales personnel, Compensating sales personnel, Managing expenses of sales personnel, Sales meeting and sales contests, Controlling sales personnel, The sales budget, Quotas, Sales territories, Sales control and cost analysis, International sales management, Case study.

### 581054 統計分析 3 選 鄭文英, 上

本課程主要目的，在介紹學生有關學術研究中最常使用的統計方法與資料分析策略，經由課程內容的講授，將使學生更加了解有關管理領域中有關研究的基本技能。

### 581054 Statistical Analysis 3 E W. Y. Cheng, F

The main purpose of this course is to introduce basic knowledge and skill about research. The scope includes theoretical field and practical application of statistics and strategy. Through this course, the students will have more clear understanding and skill to conduct a research design.

### 581055 消費者行為 3 選 洪春吉, 上

本課程旨在使學生獲得消費者行為之理論及實務之相關知識。內容包括：消費者行為導論、消費者之資訊處理與決策、消費者行為之微觀面、消費者行為之宏觀面。

### 581055 Consumer Behavior 3 E C. J. Horng, F

The main subjects are summarized as follows: the introduction of consumer behavior, consumer information processing and decision, the micro-perspectives of consumer behavior, the macro-perspectives of consumer behavior.

### 581056 非營利組織與管理 3 選 洪春吉, 上

本課程旨在使學生獲得非營利組織與管理之相關知識。內容包括：非營利組織導論、非營利組織之規劃與控制、非營利組織之組織體系、非營利組織之領導。

### 581056 Nonprofit Organization and Management 3 E C. J. Horng, F

The main subjects are summarized as follows: the introduction of nonprofit organization, planning and controlling of nonprofit organization, organization systems of nonprofit organization, leadership of nonprofit organization.

### 581057 人力資源管理個案研討 3 選 林鉦琴, 上

個案研究乃是有效學習人力資源管理理論之主要方法之一。本課程亦是奠基於此教學方式，其中牽涉之相關課程如下：人力資源管理理論、薪資管理、招募、福利管理、人力資源規劃、昇遷管理、工作分析、離職管理、教育訓練、績效評估、國際性人力資源管理。



**581057 Case Study of Human Resource Management**                      **3    E**                      **C. C. Lin, F**

The main purpose of this course is discussing and comprehending topics in human resource management. The issues include theoretical discuss and practical application. Through this course, the students will have more clearly understanding the practical application and development of human resource management.

**581058 國際人力資源管理**                      **3    選**                      **林鈺琴, 上**

本課程主要教學目的在於透過教師授課、師生互動討論、個案分析與實務界專業人士之專題演講，使修課學生得以從中學習國際人力資源管理的相關學術概念、知識與實務技能。本課程將包含數項主題：國際人力資源管理思潮的發展背景與未來、國際人力資源管理策略、國際人才之招募與甄選管理、國際人才之訓練與發展管理、國際人才之績效與薪酬管理、國際人才之員工關係管理。

**581058 International Human Resource Management**                      **3    E**                      **C. C. Lin, F**

The key purpose of this course is to help students learning academic concepts, knowledge, and practical skills of international human resource management. The teaching methods in this course will include teacher' s instruction, interactive discussion, case study, and business professionals' speech of specific subjects. The subjects in this course may include the following issues: history and the future of international human resource management, international human resource management strategy, international recruiting and selecting management, international training and development management, international performance and compensation management, and international employee relations management.

**581059 衍生性金融商品**                      **3    選**                      **張宮熊, 上**

本課程規劃以衍生性金融商品之學理與實務探討為主軸，其中包括如何利用金融期貨商品進行避險、套利與投機活動。期使選修同學對衍生性商品的特性與操作有初步的認識。授課內容主要包：選擇權與期貨市場簡介：歷史報價與合約特性、選擇權與期貨的訂價原則與兩因子模型、選擇權與期貨的訂價原則、選擇權與期貨的避險策略、選擇權的套利策略及其他衍生性商品的介紹等。

**581059 Financial Derivatives**                      **3    E**                      **K. H. Chang, F**

This course discusses the theory concept and technology of financial derivatives. The main issues discussing in this course are: concept and technology of hedge, arbitrage and speculation for options and futures. The course covers the following subjects: Options and Futures markets: history, quotations and characteristics; Options and Futures pricing and the binomial model; Pricing options using Black-Scholes model ; Pricing sensitivities; Hedging with options and Futures; Options and Futures strategies: speculation and spreading.

**581060 投資組合分析與管理**                      **3    選**                      **張宮熊, 上**

本課程規劃以證券市場投資之規劃、基本分析與技術分析為重點。期使選修同學對於投資組合報酬與風險之規劃有進一步之認識。授課內容主要包括下列主題：1. 投資組合(一)：概念；2. 投資組合(二)：風險管理；3. 股票投資(一)：基本分析；4. 股票投資(二)：技術分析；5. 債券投資；6. 其他理財工具：衍生性金融商品。

**581060 Investment Portfolio Analysis and Management**                      **3E**                      **K. H. Chang, F**

This course is an advanced one for security market investment , investment planning , foundation and technique analysis are included. The main issues discusses: 1. Investment Portfolio1 : Introduction; 2. Investment Portfolio2 : Risk Management; 3. Stock Market Investment : Foundation Analysis; 4. Stock Market Investment : Technique Analysis; 5. Debt Security Market Investment; 6. Derivatives.

**581061 決策分析**                      **3    選**                      **鄭文英, 上**

本課程之目的在介紹可改善管理者決策制定的決策制定方法，探討決策如何被制定及如何改善制定過程。課程內容包括：決策制定的特性，決策者和決策型態，討論管理決策型態的應用，決策型態的基本要素，組織內的決策制定，決策制定與組織文化的關係，決策輔助工具，檢視環境改變對決策制定的影響。

**581061 Decision Analysis 3 E W. Y. Cheng, F**

The purpose of the course is to provide the students with an understanding of decision-making approaches that can be used to improve a manager's decision making. We examine how decisions are made and how the process can be improved. The course covers the following subjects: Nature of Decision Making, Describes the Decision Maker and Decision Styles, Discusses Managerial Decision Style Application, Covers the Elements of Decision Style, Introduces Decision Making in an Organizational Context, Relates Decision Making to the Organization's Culture, Decision-Aiding Tools, Examines the Impact of Environmental Changes on Decision Making.

**581062 物流管理 3 選 陳啟政, 上**

本課程的主要目的，在於教導學生物流管理所涉及之相關概念，決策範圍及實務。因此，主要的授課內容將包括：物流導論、顧客服務、供應鏈管理、物流資訊、網際網路與物流整合、全球物流、物流定位與策略、物流組織。

**581062 Logistics Management 3 E C. C. Chen, F**

This course will teach students the related concepts, scope of decision-making and practice of logistics management. Therefore, the major subjects will include: overview, customer services, supply-chain management, business logistic information, internet and logistics resources, inventory management, transport management, warehousing management, logistics integration, global logistics, position and strategies of logistics, organization of logistic.

**581063 專案管理 3 選 陳啟政, 上**

從企業觀點，讓學員能夠先探索專案管理的概念，進一步思考專案成功的關鍵、確保專案的需要性與方法，引導學員深入了解，了解專案管理如何運作，了解專案管理的實務應用模式，建立學員具業界與學界期望有的能力與觀念。

教學內容包括：何謂專案管理、組織策略與專案管理之結合、專案之定義與確認、專案計劃、風險管理、如何縮短專案時程、專案之資源規劃、專案組織運作、專案經理人之領導與專案小組之管理、專案績效之衡量與評估、專案稽核、跨國性專案之管理。

**581063 Project Management 3 E C. C. Chen, F**

Over the past several decades, more and more work has been accomplished through the use of projects and project management. The use of projects has been growing at an accelerated rate. This course will be focused on the students' full understanding in the various roles the project manager must play and to the skills required to play them effectively. In addition, to cover the various ways in which projects can be organized. The nature of the project team and the behavioral aspects of projects are also briefly introduced. The skills of project planning, budgeting, scheduling, monitoring, controlling and risk management will be covered too. The major chapters of contents will be including: The world of project management, The manager, the organization and the team, Planning the project, Budgeting the project, Scheduling the project, Allocating resources to the project, Monitoring and controlling the project, Evaluating and terminating the project.

**581064 整合行銷傳播 3 選 賴鳳儀, 上**

本課著重於如何協調各項促銷元素與行銷活動的整合運用，以在整體行銷策略上達到綜效。從「整體、整合」觀點下規劃相關的行銷計畫與促銷活動，並協調運用各項傳播功能的運用，企業體可因而創造出一個具整體性、一致性形象，而非單靠過去傳統的使用廣告達到而已。

**581064 Integrated Marketing Communication 3 E F. Y. Lai, F**

This course emphasizes on the concept of coordinating various promotional elements and other marketing activities in a more integrated strategic approach. Through using the "big picture" approach to planning marketing and promotion programs and coordinating the various communication functions to create a consistent, unified image of a firm, rather than primarily based on advertising along.

**581065 策略性行銷管理 3 選 沈慶龍, 上**



本課程提供學生以一更具完整性、系統性與策略性的規劃、分析與執行模式，對策略性行銷管理兼具理論與實務上的了解。主要教材內容包括：行銷倫理與社會責任、事業策略上的行銷角色、策略性使命、目的與目標、環境管理、策略性行銷模式與方案選擇、行銷計畫之財務性分析、行銷努力之執行與評估。

**581065 Strategic Marketing Management 3 E C. L. Shen, F**

This course will provide both theoretical and practical approach to planning, analyzing and implementing marketing strategies with a more holistic, systematical and strategical framework. The major subjects of this course will include: marketing ethics and social responsibility, marketing role in the implementation of business strategies, strategic mission, goals & objectives, environmental management, marketing strategy models & selection, financial analysis in marketing plan, implementation and assessing the marketing efforts.

**581066 中小企業財務會計 3 選 許文西, 上**

本課程之主要目的在培養學生中小企業財務會計之實務技能，針對中小企業之特性，並以多面向的角度設計小型個案，作深入分析，使學生了解中小企業營運所需之財務及會計相關實務。主要課程內容包括：中小企業財務及會計概論、年度預算編製實務、基礎營運資金管理、基本財務報表分析、籌資管道及融資實務、租稅處理與報稅實務等內容。

**581066 Financial Accounting for Small and Medium Enterprises 3 E W. H. Hsu, F**

The main purpose of this course is to provide the students with in-depth understanding of the accounting and financial practices for Small and Medium Enterprises (SMEs). It focuses on the issues surrounding Small and Medium Enterprises, major topics including: financial and accounting practices for SMEs, budgeting, working capital management, financial statement analysis, financing, tax practices, etc.

**581067 管理會計 3 選 許文西, 上**

本課程之目的在介紹管理會計的基本概念及實務作法。本課程之前半部著重於成本之取決與成本習性分析；後半部則著重於與成本有關的管理決策，包括規劃會計、控制會計與決策會計。課程內容包括：管理會計的基本概念、成本習性、成本分析、行為會計、財務工具的應用、短期營運預算、長期資本運算、全面管理控制、責任中心制度、短期決策、長期決策。

**581067 Managerial Accounting 3 E W. H. Hsu, F**

The course introduces the basic concepts and practice of managerial accounting. The first half of the course focuses on the cost determination and cost behavior, and the rest emphasizes on the cost-related managerial decision-making, including planning accounting, controlling accounting, and decision accounting. The course covers the following topics: Basic managerial accounting concept, Cost behavior, Cost analysis, Behavior costing, The practice of financial tools, Short-term working capital budget, Long-term capital budget, Total management control, Responsibility center, Short-term decision, Long-term decision.

**581068 金融業管理 3 選 葉憲弘, 上**

由於本課程專注於金融機構之風險與報酬以及其來源，探討金融機構經理人如何利用投資組合為其股東獲取最大財富。本課程內容包括現代金融機構之介紹，金融仲介風險，衡量各種風險如利率風險、市場風險、信用風險、外匯風險、國家風險等，負債與流動性管理，存款保險與其他負債保證，資本適足性，放款出售與其他信用風險管理技術，以及證券化等主題。

**581068 Financial Institution Management 3 E H. H. Yeh, F**

Since the focus of the course is on return and risk and the sources of that return and risk, the course relates ways in which the managers of modern financial institutions can expand return with a managed

level of risk to achieve the best return-risk outcome for the owners of financial institutions. The topics of the course include introduction of modern financial institutions, the risks of financial intermediation, measuring risks such as interest rate risk, market risk, credit risk, foreign exchange risk, sovereign risk and others, liability and liquidity management, deposit insurance and other liability guarantees, capital adequacy, loan sales and other credit risk management techniques, and securitization.

### 581069 領導學

3 選

洪春吉，下

本課程旨在使學生獲得領導之理論及實務之相關知識。內容包括：領導之導論、有效領導之核心要素、領導學說之根源、當前與未來之領導學說。

### 581069 Leadership

3 E

C. J. Horng, S

The main subjects are summarized as follows: the introduction of leadership, the core elements of effective leadership, the disciplinary roots of leadership, current and future approaches.

### 581070 管理個案研討

3 選

林鈺琴，下

本課程主要教學目的在於透過教師授課、師生互動討論、個案分析與實務界專業人士之專題演講，使修課學生得以將之前所學各種管理課程的學術概念、知識與實務技能，應用至實際國內外管理個案的討論分析演練中。本課程將包含數項主題：行銷管理的個案研討、人力資源管理的個案研討、財務管理的個案研討、資訊管理的個案研討、生產與作業管理的個案研討、研發管理的個案研討、策略管理的個案研討。

### 581070 Case Study of Management

3 E

C. C. Lin, S

The key purpose of this course is to help students applying academic concepts, knowledge, and practical skills of each management-related course learned to the analysis and discussion of real domestic and abroad business management cases. The teaching methods in this course will include teacher's instruction, interactive discussion, case study, and business professionals' speech of specific subjects. The subjects in this course may include the following issues: case studies in marketing management, case studies in human resource management, case studies in financial management, case studies in production and operation management, case studies in information management, case studies in research and development management, case studies in strategic management.

### 581071 科技管理

3 選

陳啟政，下

本課程之教學目的在於透過上課與討論、實地訪察方式，令修課同學對科技管理的內涵進行瞭解。主要包括以下主題：1. 科技與策略整合；2. 科技策略的設計與評估：科技的獨特性及優勢與權力、科技的獲取與銷售、科技的評估、產業界的研發、研發的組織、策略的實施方案；3. 科技策略的擬定——開發廠商的創新能力：科技的資源、廠商的創新；4. 開發策略與實施：新產品的開發、建立科技優勢與能力。

### 581071 Management of Technology

3 E

C. C. Chen, S

A key purpose of Management of Technology is to help the student to understand how the course to help the general manager, someone responsible for strategic management of an organization or autonomous business unit, deals with issues of technology and innovation. The subjects may include the following issues: 1. Integrating technology and strategy; 2. Design and evaluation of technology strategy; 3. Enactment of technology strategy-developing the firms innovative capabilities; 4. Creating and implementing a development strategy; 5. Innovation challenges in established firms. The course teaching approach may include the reading, case study, in class discussion and may have a technological firm visit.

### 581072 企業診斷

3 選

謝惠元，下

本課程之目的，在教導學生相關的知識與方法，以整體系統的觀點，對企業營運的過程中，不斷地加以觀察、分析與診斷，隨時發掘經營上的缺失，並加以導正，以提高企業經營績效，課程主要內容包括：除神話——及確認需求、管理及營運控制——概論、策略要素、策略目標、計劃報告書、計劃目標、如何設定管理效標、如何衡量行銷管理的績效、如何衡量銷售管理的績效、如何衡量研發管理的績效、如何衡量採購管理的績效、如何衡量生產規劃與控制之績效、如何衡量生

產管理的績效、如何衡量製造、工業工程的績效、如何衡量物料管理的績效、如何衡量維護管理的績效、如何衡量廠房與設備管理的績效、如何衡量品質管理的績效、如何衡量財務管理的績效、如何衡量審計管理的績效、如何衡量行銷資訊系統管理的績效、如何衡量人力資源管理的績效、最後的提醒——人。

### 581072 Business Diagnosis

3 E

H. Y. Hsieh, S

This purpose of this course seeks to give students a comprehensive understanding on the concepts, principles and methods of performance assessment and management diagnosis. Through the continuous measurement on productivity, objectives and planning for every function and at all levels, the managerial weaknesses can be detected and then the correct actions can be taken to improve the overall performance.

The main subjects of this course will include: Let's Destroy Some Myths-and Identify the Needs. Management and Operating Control: An Overview. The Elements of Strategy. Organizing Strategy Objectives. Plan Statements. Plan Objectives. How To Set Management Performance Standards. How To Measure Marketing Management Performance. How To Measure Sales Management Performance. How To Measure Engineering Research and Development Management Performance. How To Measure Purchasing Management Performance. How To Measure Production Planning and Control Management Performance. How To Measure Production Management Performance. How to Measure Manufacturing, Industrial Engineering Management Performance. How To Measure Materials Handling Management Performance. How To Measure Maintenance Management Performance. How To Measure Plant and Facilities Management Performance. How To Measure Quality Assurance Management Performance. How To Measure the Management Performance of the Treasurer. How To Measure Controller ship Management Performance. How To Measure EDP/MIS Management Performance. How To Measure Personnel Management Performance. A Final Note ...PEOPLE !

### 581073 國際行銷管理

3 選

蔡展維, 下

本課程主要在教導與探討有關國際行銷管理相關的學理與課題，期使選修同學對多國籍企業之行銷管理有更進一步的認識。主要教材內容包括全球化與全球環境，全球策略與全球行銷策略。

### 581073 International Marketing Management

3 E

C. W. Tsai, S

The main purpose of this course is discussing and comprehending the related knowledge and issues about International Marketing Management. The major contents will cover : Globalization and Global Environment, Global Strategy, Global Marketing Strategy. Through this course, the students will have more clear understanding about the Marketing Actions in Multinational Corporations (MNCs).

### 581074 企業評價

3 選

許文西, 下

本課程旨在探討企業如何建立及應用企業評價模式解決證券投資及購併之評價問題。並探討不同常用模式，如自由現金流量折現評價模式（FCF）、超常盈餘折現評價模式（AE）及相對價值評價法中之本益比法（PE）之適用性。

### 581074 Business Valuation

3 E

W. H. Hsu, S

This course is designed to provide the students with the understanding of business valuation, mainly on the issue of how business establishes and employs business valuation models to solve the valuation problems involving security investment and merger and acquisition. The comparison of different commonly used models, such as the discounted free cash flow model, abnormal earning model and price to earning ratio model are also discussed.

### 581075 國際財務管理

3 選

葉憲弘, 下

本課程主要探討國際企業之財務管理概念與技巧。共分成三大部分：首先針對國際金融市場與經濟環境作一介紹；第二部分對從事國際操作之企業風險進行深入討論；第三部分探討國際資產的管理。課程內容包括：1. 國際貨幣制度；2. 國際金融市場；3. 國際銀行業務；4. 外匯市場；5. 匯率預測；6. 衡量外幣的風險；7. 外幣風險管理；8. 交換合約；9. 期貨與選擇權；10. 國際貿易的管理與財務；11. 國際投資的政策與策略；12. 國際資本預算；13. 政治風險；14. 全球移轉訂價；15. 全球化營運之評估與控制；16. 多國籍企業的短期財務管理；17. 國際租稅。

**581075 International Financial Management 3 E H. H. Yeh, S**

This course discusses the concept and technology of financial management for international business. The main issues discussing in this course are: the international financial markets and institutions, international risk management, and International asset management. The course covers the following subjects: 1. The international monetary system; 2. International financial markets; 3. International banking; 4. The foreign exchange market; 5. Forecasting exchange rates; 6. Measurement of foreign currency exposure; 7. Management of foreign currency exposure; 8. SWAPS; 9. Futures and Options; 10. The management and finance of international trade; 11. International investment policy and strategy; 12. International capital budgeting; 13. Political Risk; 14. Global transfer pricing; 15. Evaluation and control of global operations; 16. Short-term financial management on multinational companies; 17. International Taxation.

**581076 財務管理個案研討 3 選 葉憲弘, 下**

本課程主要在教導與研討有關財務管理個案相關的學理與實務主題,使選修同學瞭解有關財務管理個案與機構領域中學術與實務的現況與發展。

**581076 Case Study of Finance 3 E H. H. Yeh, S**

The main purpose of this course is discussing and comprehending topics in Case Study of Finance Management. The issues include theoretical discuss and practical application. Through this course, the students will have more clearly understanding the practical application and development of Case Study of Finance products and institutions.

**581077 投資銀行 3 選 葉憲弘, 下**

本課程主要使學生熟悉投資銀行之各項業務,課程內容包括:1.投資銀行業簡介、2.投資銀行主要業務:(a)中級與次級市場業務。(b)企業重整。(c)財務工程。(d)其他營利活動如投資諮詢、投資管理及商人銀行業務。3.投資銀行週邊業務(a)研究。(b)資訊提供服務。

**581077 Investment Bank 3 E H. H. Yeh, S**

This course is organized to expose students to be familiar with the following topics:1.Introduction and overview of investment banking industry. 2.Revenue-generating activities in which investment banks engage. (a)Primary and secondary market making. (b)Corporate restructuring. (c)Financial engineering. (d)Other revenue-generating activities such as advisory services, investment management, and merchant banking. 3.Support activities in which investment banks engage. (a) Research. (b) Information services.

**581078 產業分析 3 選 沈慶龍, 下**

本項課程旨在介紹產業結構、分類、經濟、分析及改善的相關性議題。為了增加學生多元化綜合分析能力,本課程強調報告寫作。課程涵蓋內容包括:1.產業緒論2.產業結構、組織與分類3.產業環境與經濟4.產業競爭優勢分析5.產業策略6.個別性產業層面分析7.個案研討。

**581078 Industrial Analysis 3 E C. L. Shen, S**

The objective of this subject is to give students the concept of industry structure, classification, economics, analysis, and improvement. Reports of various topics are required. Briefly, he contents are as fallows: 1. Introduction. 2. Industry structure, organization, and economics. 3. Industry environments and economics. 4. Analysis of industry competitive advantages. 5. Industry strategy. 6. Individual industry perspectives. 7. Case study.

**581079 人力資源管理制度設計 3 選 林鈺琴, 下**

本課程旨在使學生獲得人力資源管理之理論及實務等相關知識。包含的範圍是有關組織的策略、人事遴選、工作分析、任用管理、績效評估、薪資與福利及離職管理等範圍。

**581079 Human Resource System Design 3 E C. C. Lin, S**

The objective of this course is designed to teach the related knowledge of theory and practices of design of human resource management. The scope includes organizational strategy, selection, job analysis, performance appraisal, and turnover.



## 2.四年制 農園生產系 產學攜手專班

### (一)教育目標

- 1.以果樹、蔬菜、花卉、農藝、特藥用作物及園林景觀為主軸，建立熱帶農業科技基礎能力。
- 2.配合產業趨勢、培育學生具備栽培管理、生理、育種改良、生物科技及園產品處理等基本專業技術。
- 3.培育兼具現代科學基礎理論、應用、生產技術及永續經營之專業實務人才。

### (二)校定共同必修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		第三學年		第四學年		備 註
		上	下	上	下	上	下	上	下	
通識選項課程 General Education	12	2	2	2	2	2	2			通識選項課程： 人文學科：2 門 社會科學：3 門 數理與應用科學：1 門
國文(閱讀與寫作)(1)(2) Chinese	4	2	2							國文(閱讀與寫作)(1) 國文(閱讀與寫作)(2)
大一英文(1)(2) Freshman English	4	2	2							大一英文(1) 大一英文(2)
英語聽講練習 101~102 English Listening & Speaking Practice	2	1	1							英語聽講練習 101 英語聽講練習 102
憲法 Constitution	2				2					
體育 Physical Education	2	1	1							
通識教育講座 Lectures on General Education	1			1						各系依序開課，開 課學期不定
外語實務 Foreign Language Proficiency Test	0	0								畢業前修畢 通過標準依「外語 實務課程實施要 點」規定
合 計	27	8	8	4	5	2	0	2	0	



(三)學院共同必修科目

文 科 目 名 稱	學 分 數	第一學年		第二學年		第三學年		第四學年		備 註
		上	下	上	下	上	下	上	下	
普通化學(1) General Chemistry (1)	3	3								
普通化學實驗(1) General Chemistry Lab. (1)	1	1								
生物統計 Biometry	2				2					
生物統計實習 Practice of Biometry	1				1					
合 計	7	4	0	0	3	0	0	0	0	

(四)專業必修科目

文 科 目 名 稱	學 分 數	第一學年		第二學年		第三學年		第四學年		備 註
		上	下	上	下	上	下	上	下	
植物學 Botany	2	2								
植物學實習 Practice of Botany	1	1								
園藝學 Horticultural Science	2		2							
作物學 Science of Field Crops	2		2							
植物繁殖技術 Plant Propagation Techniques	2		2							
植物繁殖技術實習 Practice of Plant Propagation Techniques	1		1							
有機化學 Organic Chemistry	2		2							
有機化學實驗 Organic Chemistry Lab.	1		1							
植物生理學 Plant Physiology	3			3						
植物生理學實驗 Plant Physiology Lab.	1			1						
花卉學 Floriculture	2			2						
花卉學實習 Practice of Floriculture	1			1						
蔬菜學 Olericulture	2			2						
蔬菜學實習 Practice of Olericulture	1			1						
果樹學 Pomology	2				2					
果樹學實習 Practice of Pomology	1				1					
生物化學 Biochemistry	2				2					
生物化學實驗 Biochemistry Lab.	1				1					
土壤與肥料 Soil and Fertilizer	2				2					
土壤與肥料實習 Practice of Soil and Fertilizer	1				1					

文 科 目 名 稱	學 分 數	第一學年		第二學年		第三學年		第四學年		備 註
		上	下	上	下	上	下	上	下	
生物技術 Biotechnology	2					2				
作物病害管理與診斷技術 Management and Identification Techniques of Plant Diseases on Crop Plant	2					2				
作物病害管理與診斷技術 實習 Practice of Management and Identification Techniques of Plant Diseases on Crop Plant	1					1				
特用作物學 Special Crops Science	2					2				
特用作物學實習 Practice of Special Crops Science	1					1				
作物蟲害管理與診斷技術 Management and Identification Techniques of Plant Insect Pests on Crop Plant	2						2			
作物蟲害管理與診斷技術 實習 Practice of Management and Identification Techniques of Plant Insect Pests on Crop Plant	1						1			
遺傳學 Genetics	2						2			
遺傳學實習 Practice of Genetics	1						1			
農園產品處理學 Postharvest Technology of Agricultural Products	2						2			
農園產品處理學實習 Practice of Postharvest Technology of Agricultural Products	1						1			
糧食作物學 Food Crops	2						2			
糧食作物學實習 Practice of Food Crops	1						1			
校外實習 Practice of Industrial Training	2			1		1				學生畢業前須參與校外實習超過 320 小時以上 1 學分 160 小時
專題討論 Seminar	2							1	1	

文 科 目 名 稱	學 分 數	第一學年		第二學年		第三學年		第四學年		備 註
		上	下	上	下	上	下	上	下	
作物育種學 Crop Breeding	3							3		
作物育種學實習 Practice of Crop Breeding	1							1		
農業經營 Agri-Business Management	2								2	
農園藝場實習（1） Practice of Agri-Horticultural Farm （1）	2							2		
農園藝場實習（2） Practice of Agri-Horticultural Farm （2）	2								2	
合 計	66	3	10	11	9	12	9	7	5	

(五)專業選修科目

文 科 目 名 稱	學 分 數	第一學年		第二學年		第三學年		第四學年		備註
		上	下	上	下	上	下	上	下	
農業機械 Agricultural Machinery	2	2								
農業機械實習 Practice of Agricultural Machinery	1	1								
生態學 Ecology	2	2								
微生物學 Microbiology	2	2								
微生物學實習 Practice of Microbiology	1	1								
農業氣象學 Agricultural Meteorology	2		2							
作物分類學 Systematic Taxonomy in Economic Crops	2		2							
作物分類學實習 Practice of Systematic Taxonomy in Economic Crops	1		1							
有機農業概論 General Discussion of Organic Farming	3			3						有機農業學程
景觀植物 Landscape Plants	2			2						
景觀維護與管理 Landscape Maintenance and Management	2			2						景觀學程
香草科學 Science of Aromatic Herbs	2			2						
香草科學實習 Practice of Aromatic Herb Science	1			1						
食藥用菌菇栽培 Cultivation of Edible and Medicinal Mushrooms	2				2					
食藥用菌菇栽培實習 Practice of Cultivation of Edible and Medicinal Mushrooms	1				1					
造園學 Landscape Architecture	2				2					
造園學實習 Practice of Landscape Architecture	1				1					
設施園藝 Horticultural Production Under Structures	2					2				



文 科 目 名 稱	學 分 數	第一學年		第二學年		第三學年		第四學年		備 註
		上	下	上	下	上	下	上	下	
設施園藝實習 Practice of Horticultural Production Under Structures	1					1				
作物營養管理與診斷技術 Crop Nutrition Management and Diagnostic Techniques	2					2				
作物營養管理與診斷技術實習 Practice of Crop Nutrition Management and Diagnostic Techniques	1					1				
熱帶亞熱帶果樹學 Tropical and Subtropical Fruit Production	2					2				
熱帶亞熱帶果樹學實習 Practice of Tropical and Subtropical Fruit Production	1					1				
有機質肥料生產 Production of Organic Fertilizers	2					2				有機農業學程
有機質肥料生產實習 Practice of Production of Organic Fertilizers	1					1				有機農業學程
造園技術 Landscape Technology	2					2				
造園技術實習 Practice of Landscape Technology	1					1				
觀賞植物生產技術 Ornamental Plants	2					2				
觀賞植物生產技術實習 Practice of Ornamental Plants	1					1				
植物生物技術 Plant Biotechnology	2						2			生物技術學程
植物生物技術實習 Practice of Plant Biotechnology	2						2			生物技術學程
經濟果樹 Economic Fruit Crops	2						2			
經濟果樹實習 Practice of Economic Fruit Crops	1						1			
植物生長調節劑應用 Application of Plant Growth Regulators	2						2			
植物分子檢測技術 Plant Molecular Diagnostic Techniques	2						2			生物技術學程

文 科 目 名 稱	學 分 數	第一學年		第二學年		第三學年		第四學年		備 註
		上	下	上	下	上	下	上	下	
植物分子檢測技術實習 Practice of Plant Molecular Diagnostic Techniques	1						1			生物技術學程
生物資訊學導論 Introduction of Bioinformatics	2						2			生物技術學程
景觀工程 Landscape Engineering	2						2			景觀學程
景觀工程實習 Practice of Landscape Engineering	1						1			景觀學程
草坪管理 Turf Management	2							2		
草坪管理實習 Practice of Turf Management	1							1		
經濟蔬菜生產 Economic Vegetable Crops	2							2		
園藝種苗生產技術 Seedling Production Techniques of Horticultural Crops	2							2		
園藝種苗生產技術實習 Practice of Seedling Production Techniques of Horticultural Crops	1							1		
作物生理 Crop Physiology	2							2		
蘭花栽培 Orchid Culture	2							2		
蘭花栽培實習 Practice of Orchid Culture	1							1		
休閒農業 Leisure Agriculture	2							2		
景觀設計 Landscape Design	2							2		景觀學程
景觀設計實習 Practice of Landscape Design	1							1		景觀學程
蔬菜育種 Vegetable Crop Breeding	2							2		
有機農業之土壤管理 Soil Management of Organic Farming	2							2		有機農業學程
有機農業之土壤管理實習 Practice of Soil Management of Organic Farming	1							1		有機農業學程
植物組織培養技術 Plant Tissue Culture Techniques	2								2	

文 科 目 名 稱	學 分 數	第一學年		第二學年		第三學年		第四學年		備 註
		上	下	上	下	上	下	上	下	
植物組織培養技術實習 Practice of Plant Tissue Culture Techniques	1								1	
特藥用作物之利用 Utilization of Special & Medicinal Crops	2								2	
特藥用作物之利用實習 Practice of Utilization of Special & Medicinal Crops	1								1	
花卉利用 Flower Design and Decoration	2								2	
花卉利用實習 Practice of Flower Design and Decoration	1								1	
園藝作物產期調節 Forcing Culture of Horticultural Crops	2								2	
作物有機栽培 Crop Cultivation of Organic Farming	2								2	有機農業學程
作物有機栽培實習 Practice of Crop Cultivation of Organic Farming	1								1	有機農業學程
景觀規劃 Landscape Planning	2								2	景觀學程
景觀規劃實習 Practice of Landscape Planning	1								1	景觀學程
										選修應修 30 學分
合 計	104	8	5	10	6	18	17	23	17	

# 農園生產系

Department of Plant Industry

## 一、必修科目 Required Courses

### 05024 植物學 2 必

本課程之目的在使學生瞭解植物學之基本知識。包括植物細胞、根、莖、葉、花、果實及種子之構造與功能，以及由低等植物至高等植物，包括藻類、菌類、苔蘚類與蕨類等之形態與生活史。

### 05024 Botany 2 R

The purpose of this course is to provide students with basic botanical science. Course contents include the structure and function of plant cells, roots, stems, leaves, flowers, fruits and seeds of higher plants, the morphology and life cycles of lower and higher plants, including algae, fungi, mosses and ferns.

### 05025 植物學實習 1 必

本實驗課程首先讓學生熟習顯微鏡之操作，繼而在顯微鏡下觀察植物細胞之構造、有絲分裂過程以及植物各組織與根、莖、葉、花、果實及種子等器官之構造；觀察低等植物如藻類、菌類、苔蘚類與蕨類等之形態與構造。

### 05025 Practice of Botany 1 R

The objective is firstly to acquaint the students with the techniques of operating the microscope. Secondly, to enable the students observing the structure and mitosis process of plant cells; the anatomy of roots, stems, leaves, fruits and seeds of higher plants will be observed under a microscope. The morphology and structure of lower plants, such as algae, fungi, mosses and ferns are also studied in this course.

### 20895 園藝學 2 必 何韻詩、陳麗筠 劉福隆

這是門概論課程，介紹園藝作物：果樹、蔬菜、花卉的生產、處理、和利用原理；觀賞植物在景觀和環境上的運用。認識相關的科技與產業，它們在經濟上的重要性和在國內的分布情況。了解園藝栽培在世界上對於提供養分和食物，改善環境生活品質，美化景觀，及醫藥利用上所扮演的角色。

### 20895 Introduction to Horticultural Science 2 R Y. S. Ho, L. Y. Chen, F. L. Liou

Basic principles of production, processing and utilization of fruit, vegetable, flower and ornamental crops are introduced in this course. The economic importance and distribution of horticultural enterprises,

roles of horticulture in world nutrition and food supply, improvement of environmental quality in the landscape, aesthetic values, and medicinal uses are also covered.

## **21343 作物學**

**2 必**

**古明萱**

本課程主要在使學生對農藝作物之生長發育與環境因子之關係及對栽培管理技術有一整體性之瞭解。內容包括介紹農藝作物之分類、生理、生長與環境之關係，以及栽培與管理技術，包括繁殖、施肥、灌溉、病虫害及採收貯藏等。

## **21343 Science of Field Crops**

**2 R**

**M. S. Guu**

The major objectives of this course are to introduce the growth and development of different agronomic crops and their relationships with different environmental factors. Also, the cultural system for each crop including propagation, fertilizing, irrigation, pest management and postharvest techniques etc, will be introduced.

## **21483 植物繁殖技術**

**2 必**

**傅炳山、陳幼光**

**劉福隆、金石文**

本課程旨在介紹植物繁殖的原理和技術。主要的內容涵蓋植物繁殖的生物學、繁殖的環境、種子繁殖的方法，包括種子的發育、生產和處理技術，以及無性繁殖方法，包括扦插、嫁接、壓條和特化莖或根的繁殖等。

## **21483 Plant Propagation Techniques**

**2**

**R B. S. Fuh, Y. K. Chen,**

**F. L. Liou, S. W. Chin**

The objective of this course is to introduce the principles and techniques of plant propagation. The main content will cover the biology of plant propagation, propagation environment, seed propagation including seed development, seed production and handling techniques and vegetative propagation methodology, which includes cuttings, grafting, layering and propagation by specialized stems and roots.

## **21484 植物繁殖技術實習**

**1 必**

**傅炳山、陳幼光**

**劉福隆、金石文**

此乃配合植物繁殖技術講授課程之一應用的繁殖課程。學生將可從實際的操作過程中來學習到如何利用種子繁殖的方法、種子發芽率的測試、扦插、嫁接、壓條、特化莖和根以及其他的繁殖方法。

## **21484 Practice of Plant Propagation Techniques**

**1 R**

**B. S. Fuh, Y. K. Chen,**

**F. L. Liou, S. W. Chin**

This is an applied propagation course, which accompanies the Plant Propagation lecture. This is a hands-on course, where the students will learn and practice propagation techniques such as propagation from seeds, seed germination tests, cuttings, grafting, layering, specialized stems and propagation through as well as other propagation methods.

## **20293 有機化學**

**2 必**

**趙浩然**



本課程乃著重於重要之碳化合物 ( 包括烷、醇、醚、有機鹵化物，芳香族化合物、醛、酸、酯、胺 ) 之命名、分類以及官能基，包括有機物之基本反應，各類之合成方法，相互間之關係以及其實際之應用。

**20293 Organic Chemistry**

**2 R**

**How-Ran Chao**

A systematic study of the important classes of carbon compounds (alkanes, alcohols, ethers, organic halides, aromatic compounds, aldehydes, ketones, carboxylic acids, esters and amines) is emphasized including the nomenclature, classification and functional groups. The basic reactions, methods of synthesis, interrelations, and application of organic compounds are also discussed.

**40252 有機化學實驗**

**1 必**

**趙浩然**

本課程為配合非主修有機化學者之教材而開設，期促使學生熟悉一般實驗技術，並從實驗中增加對教材之了解，除物理常數之測定外，並依各官能基之不同化合物逐一實驗：烷、烯、炔、苯、有機鹵化物、醇、醚、醛、酸、酸衍生物及胺等，每一實驗的重點是在不同官能基所產生的不同化學反應試驗。

**40252 Organic Chemistry Lab.**

**1 R**

**How-Ran Chao**

This course is designed in conjunction with the lectures for the non-organic chemistry majors. It intends to provide students a profound understanding of the subjects from laboratory practices and to familiar with basic laboratory techniques. In addition to the measurements of physical constants, the course is carried out according to the functional groups which are alkanes, alkenes, alkynes, benzenes, organic halides, alcohols, ethers, aldehydes, ketones, carboxylic acids, the derivatives of carboxylic acids, and amines. Each experiment emphasizes on the common chemical properties corresponding to the functional groups.

**55038 植物生理學**

**3 必**

**古明萱、王均琍  
蔡秀隆**

本課程在使學生獲得有關植物生理學之基本知識，課程內容包括植物生理之概念、植物之吸水及蒸散作用、礦物營養及養分之吸收輸送、光合作用、呼吸作用、氮素、脂質及其他二次代謝物之代謝。

**55038 Plant Physiology**

**3 R**

**M. S. Guu, C. L. Wang,  
S. L. Tsai**

The purpose of this course is to acquaint students with knowledge of basic principles and the application of plant physiology on the agricultural system. The contents include: Introduction of concepts in plant physiology, the process of water absorption and transpiration, absorption and translocation of mineral, nutrient, photosynthesis, respiration, metabolism of nitrogen, lipid and secondary metabolites .

**55039 植物生理學實驗**

**1 必**

**古明萱、王均琍  
蔡秀隆**

55039	Plant Physiology Lab.	1	R	M. S. Guu, C. L. Wang, S. L. Tsai
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20442 花卉學	2 必	何韻詩、陳麗筠
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20442 Floriculture 2 R Y. S. Ho, L. Y. Chen

20443 花卉學實習	1 必	何韻詩、陳麗筠
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20443	Practice of Floirculture	1	R	Y. S. Ho, L. Y. Chen
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21113	蔬菜學	2	必	金石文、劉福隆
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候及土壤與蔬菜生產之關係、蔬菜之育苗及塑膠布之應用、肥料及水分之管理、蔬菜生產之栽培管理、蔬菜採收及收穫後處理、蔬菜病蟲害防治、蔬菜品種與生產、蔬菜各論，就目前台灣所栽培之重要蔬菜種類加以闡述。

21113	Olericulture	2	R	S. W. Chin, F. L. Liou
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The goals of this course are to acquaint students with knowledge of basic principles and techniques of vegetable production. The topics include: Introduction of properties and benefits of vegetable production, Food value of vegetables, Classification of vegetables, Types of vegetables production, The relationship between soil and weather condition of vegetables production, Vegetables seedling growing and the application of mulching with PE, Fertilizers and irrigation, Cultivation management, Control of disease and insects, Varieties of vegetables and Introduction of the individual vegetable crops in Taiwan.

21114	蔬菜學實習	1	必	金石文、劉福隆
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使學生實際練習蔬菜之栽培及管理技術，包括蔬菜種類及種子之認識，整地、播種、灌溉、施肥、中耕除草、病蟲害防治、育苗、採收等生產技術之練習。期能使每一位學生栽培不同蔬菜，互相觀摩學習並提出栽培心得。

21114	Practice of Olericulture	1	R	S. W. Chin, F. L. Liou
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The objective of this course is to acquaint students practice the methods and technique of vegetable crop production, including identification of vegetables varieties and seeds, soil preparation, nursery, fertilizing, irrigation, cultivation, weed and pest control and harvest etc. Through discussion and practice of individual vegetables crop, let students understanding of both practical operation as well as theoretical aspects of the lecture subjects.

20412	果樹學	2	必	顏昌瑞、傅炳山
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本課程提供基本果樹生產管理技術，內容包括果樹栽培之環境要素、植株栽培及生理特性，開花結果習性，繁殖方法，育種，果樹栽培管理方法及各種果樹生產模式，並論及台灣果樹產業現況及變遷與未來之發展。

20412 Pomology	2	R	C. R. Yen, B. S. Fuh
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The course provides fundamental technology of fruit production and orchard management. Environmental factors, botanical and physiological characteristic, flowering, pollination and fruit bearing habits, propagation, breeding, orchard management and production of important fruit crops are covered.

20413	果樹學實習	1	必	顏昌瑞、傅炳山
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本實習課程提供果樹學田間實地操作之訓練，包括：果樹之建立與管理、土壤肥料管理、果樹整枝修剪、果苗繁殖及果樹分級、包裝、採收後處理技術，使學生在實習中了解果樹栽培之各種程序。

20413 Practice of Pomology	1	R	C. R. Yen, B. S. Fuh
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The course is designed for training of field practices of fruit crops. Emphasis will be placed on 1.establishment and management of orchard, 2.soil and soil fertility management, 3.pruning and training of fruit trees, 4.propagation and nursery practices, 5. grading, packing, and postharvest technology.

## **21326 生物化學**

**2 必**

**吳美莉**

本課程主要提供學生有關生物化學的概念，其內容包括四大部份：細胞內大分子構造之介紹--包括醣類、蛋白質及脂質之構造。生化反應之催化及控制。代謝能量之產生及儲存。遺傳訊息簡介--包括儲存、轉移及表現。

## **21326 Biochemistry**

**2 R**

**M. L. Wu**

The course is to offer concepts of biochemistry, including the following topics: Macromolecules-carbohydrates, proteins, lipids. Biochemical reactions, their catalysis and regulation. Biosynthesis and storage of biological energy. Genetics-storage, transfer and expression of genetic messages.

## **40117 生物化學實習**

**1 必**

**吳美莉**

此實習之內容包括：PH 值之測定法、緩衝溶液之製備、氨基酸之滴定曲線。蛋白質一般反應、氨基酸及蛋白質之定性分析、蛋白質之定量分析。醣類之定性分析與定量分析。

## **40117 Practice of Biochemistry**

**1 R**

**M. L. Wu**

The course contains the following categories: Determination of pH values, preparation of buffers, titration curve of amino acids. General reactions of proteins, qualitative and quantitative determination of amino acids and proteins and quantitative and qualitative determination of carbohydrates.

## **21275 土壤與肥料**

**2 必**

**王鐘和**

本課程的目的，在使學生認識土壤與肥料，並瞭解它們在地球上所扮演的角色。土壤部份的課程內容有認識土壤、土壤的生成與分類、土壤的物理與化學、土壤有機質與生物、土壤水份、土壤與植物及土壤管理。肥料部份的課程內容有認識肥料、肥料元素、有機質肥料與化學肥料、肥料需要量的決定及肥料施用法。

## **21275 Soil and Fertilizer**

**2 R**

**C. H. Wang**

The purpose of this course is to know soil and fertilizer and to understand their roles on earth. The contents of the soil part include knowing soils, genesis and classification of soils, soil physics and chemistry, organic matters and soil biology, water in soils, plants and soils and soil management. The contents of the fertilizer part include knowing fertilizers, fertilizer elements, organic and inorganic fertilizers, decision making for fertilizer requirement and fertilizer application methods.

## **21276 土壤與肥料實習**

**1 必**

**王鐘和**

本課程藉由實際操作讓學生對土壤、肥料及兩者與作物生產間的關係有更深刻的印象。實習內容包含：土壤樣品的採集與調制，土壤剖面觀察，土壤總密度與土粒密度的測定，土壤機械分析，田間容水量的測定，土壤 pH 值和石灰需要量的測定，不同土壤 pH 值

對作物生育的影響，土壤有機質和無機養份的測定，土壤 CEC 的測定，肥料認識與分析，肥料用量實驗，堆肥製作，不同堆肥成熟度對作物生育的影響。

**21276 Practice of Soil and Fertilizer 1 R C. H. Wang**

The laboratory course uses hands-on experiments to let students know more about soils, fertilizers and their roles in crop production. The experiments include: Soil sampling and preparation, Description of soil profile, Determination of bulk density and particle density, Particle size analysis, Measurement of field capacity, Soil pH and lime requirement, pH effect on crop growth and development, Soil organic matter and mineral nutrients analysis, Cation exchange capacity, Knowing fertilizers and fertilizer analysis, Optimizing fertilizer application, Compost making, Compost maturity on crop growth and development.

**05005 生物技術 2 必 廖明輝、劉宏仁**

**陳福旗**

本課程旨在加強學生對生物技術之了解、其範圍涵蓋遺傳工程技術、細胞融合技術和蛋白質工程技術等三大領域的理論和臨床上應用等方面的學習，培養生物技術相關人才為目的。

**05005 Biotechnology 2 R M. H. Liao 、 H.J. Liu  
F.C. Chen**

The curriculum will emphasize three major areas, including genetic engineering, hydridoma techniques and protein engineering .The purpose is to train students understanding the concept of biotechnology and their applications.

**21341 作物病害管理與診斷 2 必 鄭光哲  
技術**

課程目的在讓學生瞭解各種作物病原及害蟲之診斷及管理技術，其內容包括作物病蟲害種類特性、病原、害蟲為害症狀、致病機制以及管理方法，並以數種具有代表性的病蟲害，討論病原及害蟲特性、致病與為害過程、管理方法選擇、使用及效果評估等。

**21341 Management and Identification 2 R K. C. Cheng  
Techniques of Plant Diseases  
on Crop Plant**

The purpose of the course is to offer knowledge on techniques of plant disease and insect pests management and identification. The topics cover different kinds of plant diseases and insect pests, pathogen, symptoms, mechanism of pathogenesis and injury of insect pests. Representative plant diseases and insect pests are used as examples to explain the above topics.

**21342 作物病害管理與診斷 1 必 鄭光哲  
技術實習**

主要配合正課安排實習內容，期能以實際操作了解病原菌與害蟲的為害及診斷與管理技術的效果。內容包括室內的基本操作、病蟲害辨識、網室內的接種及防治實驗，以及田間的作物病害蟲診斷與管理方法等。

**21342 Practice of Management and Identification Techniques of Plant Diseases on Crop Plant 1 R K. C. Cheng**

The purpose is to cope with the lecture course, to learn the practice and techniques of management and identification on plant pathogen and insects pests. The topics include basic operation, identification and control techniques of plant diseases and insect pests on crop.

**20599 特用作物學 2 必 賴宏亮、林素汝**

本課程目的在培養嗜好作物之生產、改良人才。主要內容在敘述特用作物之意義、範圍及研究方法。選擇特用作物中之一類-嗜好作物如茶、菸、可可和咖啡等說明其栽培改良方法。

**20599 Special Crops Science 2 R H. L. Lay, S. J. Lin**

The objective of this course is to give students more confidence in their ability for producing and improving the recreation crops. The main contents of this course will describe the definition, sort, and study method of special crops. We will describe the cultivation and improvement of the recreation crops, such as tea and tobacco plant etc.

**20600 特用作物學實習 1 必 賴宏亮、林素汝**

本課程共包括：菸草、茶及咖啡等嗜好類作物之植株性狀，苗床之準備，播種，苗床管理，定植，田間管理，施肥，病蟲害防治，採收，調製方法，貯藏，產品品評及成分的分析等。

**20600 Practice of Special Crops Science 1 R H. L. Lay, S. J. Lin**

The course includes tobacco, tea and coffee on their plant characteristics, seedbed preparation, sowing, seedbed treatment, transplanting, field management, fertilization, control of disease and pest, harvesting, preparation method, storage, tasting of products, and component analysis.

**21346 作物蟲害管理與診斷技術 2 必 華真**

課程目的在讓學生瞭解各種作物病原及害蟲之診斷及管理技術，其內容包括作物病蟲害種類特性、病原、害蟲為害症狀、致病機制以及管理方法，並以數種具有代表性的病蟲害，討論病原及害蟲特性、致病與為害過程、管理方法選擇、使用及效果評估等。

**21346 Management and Identification Techniques of Plant Insect Pests 2 R T. Hua**



### **on Crop Plant**

The purpose of the course is to offer knowledge on techniques of plant disease and insect pests management and identification. The topics cover different kinds of plant diseases and insect pests, pathogen, symptoms, mechanism of pathogenesis and injury of insect pests. Representative plant diseases and insect pests are used as examples to explain the above topics.

#### **21347 作物蟲害管理與診斷技術實習**                      1      必                      華 真

主要配合正課安排實習內容，期能以實際操作了解病原菌與害蟲的為害及診斷與管理技術的效果。內容包括室內的基本操作、病蟲害辨識、網室內的接種及防治實驗，以及田間的作物病害蟲診斷與管理方法等。

#### **21347 Practice of Management and Identification Techniques of Plant Insect Pests on Crop Plant**                      1      R                      T. Hua

The purpose is to cope with the lecture course, to learn the practice and techniques of management and identification on plant pathogen and insects pests. The topics include basic operation, identification and control techniques of plant diseases and insect pests on crop.

#### **21142 遺傳學**                                      2      必                      陳福旗、陳幼光

本課程的目的在介紹遺傳的基本原理及其應用。主要內容包含孟德爾遺傳定律、有絲分裂和減數分裂、基因的連鎖和遺傳定位、DNA 的構造及複製、突變的機制及 DNA 修補、基因的表達、和族群遺傳等。

#### **21142 Genetics**                                      2      R                      F. C. Chen, Y. K. Chen,

This course is aimed at introducing the basic principles and applications of Genetics. The main content includes Mendelian genetics, mitosis and meiosis, gene linkage and genetic mapping, the structure and replication of DNA, mechanisms of mutation and DNA repair, gene expression, and population genetics.

#### **21572 遺傳學實習**                                      1      必                      陳福旗、陳幼光

本實習課程的目的在訓練學生關於遺傳基本的原理與實驗操作技術。主要內容包含性狀的遺傳、染色體結構和計數、有絲分裂與減數分裂、統計方法、細菌遺傳、質體抽取、限制酶切割及電泳分析、血型分析和人類遺傳等。

#### **21572 Practice of Genetics**                                      1      R                      F. C. Chen, Y. K.Chen,

The purpose of this laboratory is to train undergraduate students with the basic principles and practices used in genetics, including trait inheritance, chromosome structure and counting, meiosis, statistical methods, bacterial genetics, plasmid isolation, restriction enzyme digestion and gel electrophoresis, blood typing, and human genetics.



losses are also introduced.

## **22196 校外實習**

**1 必**

本課程為學生前往農園藝相關產業進行校外實習 160 小時以上，以了解農園產業之現況，提昇實務經驗及強化學生專業能力。

## **22196Practice of Industrial Training 1R**

The course is designed for the external and industrial training about 4.5 months for undergraduate student, to know the status of plant industry, and to enhance industrial and practical experience, strengthen student's professional capability.

## **21337 作物育種學**

**3 必**

**謝清祥、陳幼光**

**金石文、林素汝**

作物育種技術主要介紹無性繁殖作物、自交、異交作物育種原理及方法，熟悉各種不同之育種理論及技術。講授內容計有以下之章節：緒論：介紹育種史及育種之重要性、作物育種之遺傳學基礎、自交不和合及雄不稔性、引種法、純系育種法、選拔育種法、雜交育種法、回交育種法、雜種優勢(F1)育種技術、抗病品種之育成、遠緣雜交、抗蟲育種、誘變育種、遺傳工程之現況及在農園作物上之應用。

## **21337 Crop Breeding**

**3 R**

**C. H. Hsieh, Y. K. Chen,**

**S. W. Chin, S. J. Lin**

The goals of this course are to acquaint students with knowledge of principles and techniques used in crop breeding. Course contents include: Introduction : history and importance of crop breeding, Genetic background of breeding, Self-incompatibility and male sterility, Crop introduction, Pure-line breeding, Selection, Hybridization, Back cross, F1 hybrid breeding, Breeding for disease resistance, Interspecific hybridizations, Breeding for insect resistance, Mutation breeding and Genetic engineering in crop improvement.

## **21338 作物育種學實習**

**1 必**

**陳幼光、金石文**

作物育種實習，主要介紹各農園藝作物之育種方法及育種技術，如豆科作物、禾本科作物、十字花科、茄科及瓜類等之育種技術，包括花器構造之認識，雜交方法，多倍體處理及後裔之處理等項目。

## **21338 Practice of Crop Breeding**

**1 R**

**Y. K. Chen, S. W. Chin**

In this course important agronomic and horticultural crops are introduced. Crops include legume crops, cereals, cruciferae vegetables, solanaceae vegetables and cucurbitaceae vegetables. Contents of laboratory exercises include observation of flower structure, hybridization methods, colchicine treatment and progeny selection etc...

## **21529 農園藝場實習 (一)**

**2 必**

**待聘**

本課程係透過實地操作，使學生熟悉作物栽培之基本技能，諸如：作物種類及栽培方法之選定、農地整備、堆肥製作、生長管理、病蟲害及雜草防治實務等，使學生具備作物栽培之基本能力，並特別加強無農藥栽培技術之訓練，以建立未來從事清潔栽培或有機栽種之能力。

**21529 Practice of Agri-Horticultural Farm(1) 2 E**

Students learn the basic farming techniques through field training, such as the selection of crops and culture methods, land and manure preparation, crop management, disease and weed control etc. Students will also enrich their knowledge in clean culture and organic farming.

**21530 農園藝場實習 (二) 2 必 劉福隆**

本課程係透過實地操作，使學生熟悉作物栽培之基本技能，諸如：作物種類及栽培方法之選定、農地整備、堆肥製作、生長管理、病蟲害及雜草防治實務等，使學生具備作物栽培之基本能力，並特別加強無農藥栽培技術之訓練，以建立未來從事清潔栽培或有機栽種之能力。

**21530 Practice of Agri-Horticultural Farm (2) 2 E F. L. Liu**

Students learn the basic farming techniques through field training, such as the selection of crops and culture methods, land and manure preparation, crop management, disease and weed control etc. Students will also enrich their knowledge in clean culture and organic farming.

**30039 專題討論 2 必 全系老師**

本課程擬經由報告之收集、研讀與彙整，除令學生從而習得相關之專業知識外，亦期能由之獲得資料之分析、歸納與邏輯思考之能力，並藉由書面報告、口頭發表及討論之歷練，以培養學生之論文撰寫能力及口頭表達能力。

**30039 Seminar 2 R Faculties**

The purpose of this course is to give students training on searching information, reviewing references, designing experiment, collecting and analyzing data. The subjects cover modern aspects of animal science and farm operation. Students must give oral presentation and dissertation.

**21535 農業經營 2 必**

本課程主要在使學生除具備農園藝作物栽培之理論與技術外，尚具有新的農、園藝場規劃經營管理技能，以提昇生產與經營效率。因此本課程內容涵蓋農、園藝作物生產與經營類型、經營原則、規劃與設計、生產與環境保護、運銷成本、記帳與財務、營業登記與檢疫法規。此外，本課程亦介紹歐美日與本國等農企業管理的案例，以使學生具備國際觀

與本土化的實務經驗。

**21535 Agri-business Management      2    R**

This course offers students with theory and techniques on the concepts and efficiency of crop cultivation of farm and agribusiness. The topics include types of crop production management, field selection, principles of management, design, crop production and environmental conservation, principles of cultivation and management, cost and transport of marketing, accounting, registration and quarantine rules. In addition, this course will introduce the cases of agribusiness management of Europe, America, Japan and Taiwan in order to offer students with international and native practical experiences.

## 二、選修科目 Selective Courses

### 20973 農業機械

2 選

洪辰雄

本課程內容是使學生瞭解各種農業機械的特性及用途，內容包括農業動力與作業機二部份，農業動力主要介紹發動機、耕耘機，曳引機及電力馬達。作業機則介紹整地播種、灌溉、病蟲害防治、施肥、收穫等機具及農產品處理加工機具，另外其他工程機械在農業上應用的介紹。

### 20973 Agricultural Machinery Operation

2 E

C. H. Hung

This course is for students to understand the character and use of all kinds of Farm-machinery. This Farm-machinery course includes two parts: Farm-power and their implements. Farm power introduces engine, power tiller, tractors and electric motor; The implements introduce tillage planting, irrigation, insect and disease protection, fertilizer and harvesting equipment and agricultural products processing equipment, as well as other machines used in farm-land.

### 20975 農業機械實習

1 選

洪辰雄

本實習是讓學生實際瞭解各種農業機械的構造與功能，並學習農機的操作與維護保養。內容包括引擎耕耘機，曳引機，馬達及整地、播種、灌溉、病蟲害防治，施肥、收穫等，農產品處理加工機械及工程機械在農場上的利用。

### 20975 Practice of Agricultural Machinery Operation

1 E

C. H. Hung

This practice is for student to understand the structure and performance of all kinds of farm-machinery. and learn to operate and maintain ,including engine, power-tiller, tractor,electric motor and tillage, planting irrigation, plant protection, fertilization and harvesting of produces and other machines used in farm.

### 05010 生態學

2 選

本課程講授生態學的基本概念，內容包含緒論、生態系統、生物與環境、族群生態、群落生態以及應用生態等項目。

### 05010 Ecology

2 E

The purpose of this course is to study the basic concepts of ecology. Course contents include topics of ecosystems, organisms and environments, population ecology, community ecology, as well as applied ecology.

### 20899 微生物學

2 選

趙永椿

本課程之目的，在使學生瞭解微生物的起源，化學的基本原理，顯微鏡與染色，原核生物與真核生物細胞之形態、構造及功能，微生物的生長與代謝，遺傳與生物技術及微生



物的防治，以增進學生未來在研究植物病原微生物之相關基礎。

**20899 Microbiology 2 E Y. C. Chao**

The purpose of this course is to study the microbiological science and to give students the basic knowledge further study of phytopathogenic microbiology. Course contents include the original of microbiology, chemical principles, microscopy and staining, morphology、structure and function of prokaryotic and eukaryotic cell, microbial growth and metabolism, microbial genetics and biotechnology, and the control of microorganisms.

**20900 微生物學實習 1 選 趙永椿**

本實習之目的在訓練並建立學生在微生物學領域之基本基礎與技術，課程內容包括顯微鏡在微生物大小測量之運用，細菌的染色，培養基之製備，移種技術，微生物之分離、培養及接種技術，微生物之生理生化測試，微生物之定量及物理與化學因子抗微生物活性之評估。

**20900 Practice of Microbiology 1 E Y. C. Chao**

The purposes of this course were critically selected and tested to instruct students effectively in the basic principles and techniques within microbiological areas. Course contents include the microscopic measurement of microorganisms, bacterial staining, media preparation, culture transfer techniques, techniques for isolation, cultivation, and inoculation of microorganisms, physiological and biochemical tests of microorganisms, determination of cell number of microorganisms, and evaluation of the antimicrobial activity of physical and chemical agents.

**20970 農業氣象學 2 選 唐 琦**

本課程先介紹各種氣象要素（如日射、日照、溫度、氣壓、風、雲、霧、降水、蒸發等）應用於農業生產環境之測定方法介紹，其次對於大氣主環流、次環流（季風、氣團、鋒、氣旋）、局部環流（海風、陸風、山風、谷風）、劇烈天氣、颱風、農業氣象災害、農地微氣候形成過程逐章闡述，並由天氣變化觀察，進而使習者將相關氣象學相關知識融入農業耕作及環境關懷。

**20970 Agricultural Meteorology 2 E C. Tang**

This course will introduce the meteorological elements such as solar radiation, sunshine duration, temperature, humidity, air pressure, wind, cloud, fog, precipitation and evaporation in the initial stage. Then the main circulation of the atmosphere, secondary circulation (monsoon, air masses, front, cyclone), local circulation (sea breeze, land breeze, uphill breeze, downhill breeze), violent weather, typhoon, agricultural meteorological disaster, process of microclimate formation on farmland, will be explain chapter by chapter. By means of weather observation is helpful for the learners to apply the knowledge of meteorology in agricultural cultivation and then will be concerned the environment.

**20319 作物分類學 2 選 金石文**

本課程的目的為讓學生獲得作物分類基本原理及應用在農業上。內容包含植物分類的

基本概念、國際植物命名法及國際栽培植物命名法的介紹、及主要經濟作物之形態特徵及系統分類。

**20319 Systematic Taxonomy in Economic Crops 2 E S. W. Chin**

The purpose of this course is to acquaint students with knowledge of basic principles and the application of plant taxonomy on the agricultural system. The contents include: Introduction of concepts in plant taxonomy, Introduction of 'International code of botanical nomenclature' and 'International code of nomenclature for cultivated plants', and Morphology characters and systematic taxonomy in major economic plant.

**20320 作物分類學實習 1 選 金石文**

本實習課程在使學生能熟悉植物分類的基本技能。本課程包含主要經濟作物及其親源之鑑別。

**20320 Practice of Systematic Taxonomy 1 E S. W. Chin in Economic Crops**

The objective of this course is making students familiar with the practice of plant taxonomy. Topics of selected orders were base on crops economic values, for example Urticales, Chenopodiales, Caryophyllales etc..

**20296 有機農業概論 3 選 王鐘和**

本課程主要介紹有機農業的理念，國內外有機農業的發展及其重要性，以及達成有機農業經營的管理策略。

**20296 General Discussion of Organic Farming 3 E C. H. Wang**

The course is mainly to recognize organic farming, introducing its importance and development in different countries, and the management strategy of organic farming.

**112065 景觀植物 2 選 林雅文**

本課程將透過對景觀植物之分類、性狀、生長習性以及植物與環境實質關係之說明，使學生對景觀植栽之考慮事項以及其在環境設計上之應用方法有所了解，而能適切掌握景觀植物特性，於美學應用和空間設計，氣候調節環境工程機能之達成等方面充分考慮，正確的選擇植物種類並配置組合，加以適當維護管理，完成合理有效的植栽計畫。

**112065 Landscape Plants 2 E Y.W. Lin**

In this course, the form, growth character, classification of landscaping plants, and the relationship between which plants and the physical environment are discussed. To let the students can perfectly use the landscaping plants in design and to complete the funtion of engineering, climate control, space development ...etc. by the use of landscape plants.

**112071 景觀維護與管理 2 選 待聘**

本課程在為景觀規劃設計之相關課程基礎，課程包括：植栽之維護管理與支持、保護；水體之維護管理；設施物之維護管理及景觀維護與管理計畫之編擬，為景觀事業之企業經營。

**112071 Landscape Maintenance and Management**                      **2     E**

The course is designed to enrich students with basic concepts and knowledge of landscape planting, utilities management, and maintenance skills. The course contents may include: the maintenance and management of planting, the maintenance and management of water body, the maintenance and management of landscape structure and facilities and the operations of landscape industry will also include.

**112046 香草科學**                                      **2     選**                                      **傅炳山**

香草自古以來即隨著人類生活演進而存在。近年來，香草在台灣推廣下日漸普及加上國人歐美化趨勢，對香草的認知愈來愈強，可見其蓬勃發展之勢。本課程主要由科學觀點來講解，包括香草歷史、品種演進、栽培技術、植物特性及精油萃成分變化等，及對生物性、化學性、安全性、香精利用內容及台灣目前發展對農業衝擊效應及未來趨勢逐一說明。

**112046 Science of Aromatic Herbs**                      **2     E**                                      **B. S. Fuh**

Aroma-herbs are a glorious group of plants with fragrance and delicious air. The point of this course is under scientific view, the texture contains history, meaning, variety and propagation techniques of aroma herbs. The utility of aroma herbs like essential oil, spicy, food and aromatherapy will be introduced. The extraction methods of essential oil also discuss. At last, the extension on resort business and its future in Taiwan will predict and explain to students.

**112047 香草科學實習**                                      **1     選**                                      **傅炳山**

本實習課程主要由實際操作使學生瞭解香草的歷史及未來台灣發展的潛力外，最重要的是由田間認識香草的種類，由實驗室瞭解精油的特性及萃取方法，並體驗香草香精的香味。

**112047 Practice of Aromatic Herb Science**                      **1     E**                                      **B. S. Fuh**

This course provides practical techniques for aromatic herbs in Pingtung area. Not only to recognize the varieties but also the propagation skills will be practiced on different kinds of aromatic herbs. For more understanding about the utility of aromatic herbs, the essential oil extraction and the character of flavor on each herbs will practice in this class. The extension of spicy industry and garden resort in Taiwan will be introduced respectively.

**112051 食藥用菌菇栽培**                                      **2     選**                                      **王均琍**

本課程主要在講授有關新興之食藥用菌菇，如巴西洋菇、鮑魚菇、金頂側耳等，其形態、構造、生態及栽培方法。栽培方法包括菌種之分離、純化、培養及栽培管理技術。

**112051 Cultivation of Edible and Medicinal Mushrooms**                      **2     E**                                      **C. L. Wang**

This course is designed to acquaint students with knowledge of the morphology, structure, ecology

and cultivation techniques of some edible, medicinal, and novelty mushrooms. The isolation, purification, preparation of spawn and the cultivation techniques, growing room management for *Agaricus blazei*, *Pleurotus cystidiosus*, *Agrocybe aegerita*, etc. are discussed.

**112052 食藥用菌菇栽培實習 1 選 王均琍**

本實習主要在使學生理論與實習相互配合，認識食藥用菌菇之構造，並學習其栽培技術。內容包括菌種之分離、純化、培養與太空包栽培管理技術。

**112052 Practice of Cultivation of Edible 1 E C. L. Wang  
and Medicinal Mushrooms**

This practice is to acquaint students with the practical operation as well as the theoretical aspects lectured in class. Applied techniques designed are the isolation, purification, and culture of mushroom spawn. The bag cultivation and management technique of mushrooms are also practiced.

**112055 造園學 2 選 呂廷森、林雅文**

本課程包含 1.緒論：造園的意義、範圍、分類、人與自然的關係 2.造園史：東洋造園史、西洋造園史、中國造園史。 3.造園設計基礎 4.基地測量 5.基地分析 6.造園規劃和設計 7.植栽和植栽設計 8.造園材料 9.庭園管理與維護。

**112055 Landscape Architecture 2 E T. S. Lu, Y. W. Lin**

This course includes : 1.Introduction ,2.The garden in history, 3.Basis of landscape architecture, 4.Site survey, 5.Site analysis, 6.Planning and design, 7.Plants and planting design, 8.Landscape materials, 9.Landscape maintenance and conservation.

**112056 造園學實習 1 選 呂廷森、林雅文**

本實習包含：1.造園設計實務（1）園地測量（2）繪製設計圖樣 2.造園施工實物（1）土工（2）木工（3）石工（4）水電工 3.庭園管理與維護實務（1）器具之使用（2）樹木植栽之修剪及維（3）草皮之管理及維護。

**112056 Practice of Landscape 1 E T. S. Lu, Y. W. Lin  
Architecture**

This course includes : 1.Practices of landscape design(1)Site survey (2)Drawinglandscape map.2.Practices of landscape construction(1)Earth-work(2) Wood-work(3)Rock-work(4) Water and electric power 3.Practices of gardenmaintenance and conservation(1)Using and maintenance of instruments (2)Pruning (3)Maintenance and management of lawn.

**112053 設施園藝 2 選 何韻詩**

本課程主要介紹園藝設施種類、構造規劃和材料選擇。此外討論設施內光線、溫度、溼度、空氣等微氣候之特性、管理控制方法和作物的反應。並以水耕栽培為例、深入介紹無土栽培的運用和施肥、灌溉技術。另外簡介溫室病蟲害防治的使用、穴盤育苗等及相關的機械化設備。

**112053 Horticultural Production under Structures**                      **2     E**                      **Y. S. Ho**

This course is designed for students planning careers in commercial horticultural production under structures. The contents include types of structures and materials; microclimate in the greenhouse and its management; techniques of watering, fertilization; media and growth regulator handling; disease and pest control. Hydroponics, plug system and related appliances are also briefly introduced.

**112054 設施園藝實習**                      **1     選**                      **何韻詩**

實習以循環式水耕栽培為主要項目，同時練習養液配製、設施內環境變化觀察及管理，並做合理的病蟲害防治。另外練習孵豆芽；實際觀測各種設施架構、栽培方式和灌溉系統，了解其特色、優缺點和價格。

**112054 Practice of Horticultural Production under Structures**                      **2     E**                      **Y. S. Ho**

Circulated hydroponic production is the major topic of this course, which includes nutrient solution composing, environmental management and pests control. Projects also content bean sprout production, greenhouse structure and irrigation system measuring, and evaluating, as well as price estimation of irrigation systems.

**112059 作物營養管理與診斷技術**                      **2     選**                      **柯立祥、王鐘和**

本課程最主要是在闡明台灣耕地土壤的一些重要土壤問題及其解決之要領，同時說明作物營養管理的原則與方法，並介紹作物無機營養失調症狀及其診斷技術與改善方法。

**112059 Crop Nutrition Management and Diagnostic Techniques**                      **2     E**                      **L. S. Ke, C.H. Wang**

The course emphasizes the problems of cultivated soil in Taiwan and their amendment methods, the principle and methods of crop nutrition management, symptoms of nutrient disorders, diagnostic techniques and amendment methods.

**112060 作物營養管理與診斷技術實習**                      **1     選**                      **柯立祥、王鐘和**

本實習主要在使學生認識作物無機營養，包括大量元素及微量元素失調的症狀，以及熟悉作物無機營養：氮、磷、鉀、鈣、鎂、硫、銅、鐵、錳、鋅及硼的診斷技術與分析方法。

**112060 Practice of Crop Nutrition Management and Diagnostic Techniques**                      **1     E**                      **L. S. Ke, C.H. Wang**

The course offers hands-on practices on identifying symptoms of crop nutrient disorders including macro-elements and micro-elements and other diagnostic techniques, especially on plant and soil analysis including N, P, K, Ca, Mg, S, Cu, Fe, Mn, Zn, and B.

**112063 熱帶亞熱帶果樹學**                      **2     選**                      **傅炳山**

本課程乃著重於廣泛討論熱帶、亞熱帶果樹之特性及栽培技術，包括適宜風土、整枝

修剪、水份與肥料之管理、產期調節、植物生長調節劑之應用、病蟲害防治。並輔以最新有關文獻之新技術或知識，以印證研討重點。內容涵蓋檬果、荔枝、龍眼、蓮霧、香蕉、鳳梨、番石榴、木瓜、番荔枝、楊桃等，使學生對熱帶果樹之生產技術有更深入之瞭解。

**112063 Tropical and Subtropical Fruit Production 2 E B. S. Fuh**

This course is to cover the culture practices and management of mango, litchi longan, wax-apple, banana, pineapple, guava, papaya and carambola etc...

**112064 熱帶亞熱帶果樹學實習 1 選 傅炳山**

本實習包括芒果、荔枝、龍眼、蓮霧、香蕉、鳳梨、番石榴、木瓜、番荔枝、楊桃等之栽培管理實務。除協助果農在果園實際進行疏果、修剪、套袋及採收等作業外並與果園討論果樹生產實際問題。

**112064 Practice of Tropical and Subtropical Fruit Production 1 E B. S. Fuh**

This course covers cultural practices and management of mango, litchi, longan, wax-apple, banana, pineapple, guava, papaya and carambola etc. The techniques for students include thinning, cutting, bagging and harvest must be carried not only in university farm but also usual orchards.

**112107 有機質肥料生產 2 選 王鐘和**

本課程的目的在介紹有機質材料的種類與特性、各類有機質肥料的製造設備技術及施用的方法。

**112107 Production of organic fertilizers 2 E C. H. Wang**

The course is aimed at introducing the kinds and properties of organic materials , and the production equipments and techniques , and also introducing the application methods of organic fertilizers.

**112108 有機質肥料生產實習 1 選 王鐘和**

本課程的目的主要在讓學生熟悉有機質肥料製造的設備、流程與技術，及田間施用的原理與方法，及對作物生產的效應等。

**112108 Practice of Production of Organic Fertilizers 1 E C. H. Wang**

The laboratory course used hands-on experiments to let students know more about organic fertilizers production equipments and techniques , and the application methods of organic fertilizers and the effects of organic fertilizers on crop production.

**112118 造園技術 2 選 呂廷森**

本課程之目的在於讓學生學習如何從基地分析至各種造園元素之規劃設計,進而創造出



<b>112118</b>	<b>Landscape Design</b>	<b>2</b>	<b>E</b>	<b>T. S. Lu</b>
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112119 造園技術實習	1 選	呂廷森
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<b>112119 Practice of Landscape Design</b>	<b>1</b>	<b>E</b>	<b>T. S. Lu</b>
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112061 觀賞植物生產技術 2 選

112061 Ornamental Plants 2 E

112062 觀賞植物生產技術實習 1 選

112062 Practice of Ornamental Plants 1 E

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**112069 植物生物技術****2 選****陳幼光、鄭秋雄**

本課程的目的在使學生瞭解植物生物技術所使用到之技術的原理及植物生物技術應用在各個領域的現況及未來可能的發展。主要內容包含基因的結構與表達、植物基因轉殖技術、分子標記在植物育種上的應用、植物生物技術在基礎生物學研究上、在植物抗生物性及非生物性逆境上、在食品工業上、在環境保護上及在醫藥開發上的應用等。內容範圍也包含轉基因植物的安全性與法規的探討。

**112069 Plant Biotechnology****2 E****Y. K. Chen, C. C. Cheng**

The purpose of this course is to acquaint students with the principles of plant biotechnology and the current status of applying plant biotechnology in various fields as well as possible advancement in the future. The main subjects include gene structure and expression, plant transformation techniques, the application of molecular markers in plant breeding, and the application of plant biotechnology in basic biology research, plant resistance to biotic and abiotic stresses, food industry, environmental protection, and pharmaceutical development. Safety and regulations regarding transgenic plants are also discussed.

**112070 植物生物技術實習****1 選****陳幼光、鄭秋雄**

本實習課程旨在讓學生瞭解植物生物技術研究上常用實驗技術的原理、操作方法與應用。其內容涵蓋植物基因的選殖、轉殖及表達。個別的主題包括植物 DNA 和 RNA 的抽取、載體的構築、細菌的轉型與質體的分離、基因序列分析及資料庫的搜尋、農桿菌的培養與轉型、植物基因轉殖、轉植株的確認和重組蛋白質的表現與純化。

**112070 Practice of Crops Plant  
Biotechnology****1 E****Y. K. Chen, C. C. Cheng**

The aim of this lab is to acquaint students with the principles, practices, and application of the methodology routinely employed in plant biotechnology. The contents cover plant gene cloning, transformation and expression. The individual topics include plant DNA and RNA extraction, vector construction, bacterium transformation, plasmid isolation, gene sequence analysis and database searching, *Agrobacterium* culture and transformation, plant transformation, transformant confirmation, and recombinant protein expression and purification.

**112076 經濟果樹****2 選****顏昌瑞**

本課程著重於各種重要經濟果樹之特性及栽培技術、包括育種，適應風土，整枝及修剪等栽培管理。以台灣經濟果樹如柑橘類、芒果、荔枝、龍眼、蓮霧、番石榴、木瓜、番荔枝、梨、桃、李、梅等為主。

**112076 Economic Fruit Crops****2 E****C. R. Yen**

The course emphasizes on characteristics and cultural management of important fruit crops in Taiwan. The techniques of breeding, pruning, application of fertilizer and plant regulators, forcing culture, and bagging are discussed. The important fruit crops such as citrus, mango, litchi, longan, wax-apple, sugar-apple, guava, papaya, pear, peach and plum are included.

**112077 經濟果樹實習****1 選****顏昌瑞**

本課程配合經濟果樹課程，提供栽培技術及管理之實際操作，以加強學生對重要果樹之了解，每種果樹均包括品種、育種、整枝修剪、灌溉施肥、病蟲害防治、採收後處理、分級包裝及市場分析等。

**112077 Practice of Economic  
Fruit Crops****1 E****C. R. Yen**

The course includes field demonstration and practices of cultural techniques of economic important fruit crops. The topics for each cover variety and breeding, and training, irrigation and fertilizer application, pest control, post harvest handling, grading and marketing.

**112078 植物生長調節劑應用****2 選****傅炳山**

本課程主要在介紹植物生長調節劑包括生長素(Auxin)、激勃素(Gibberellin)、細胞分裂激素(Cytokinin)、離層酸 (Absciscic acid)、乙烯(Ethylene)、矮化劑及其他種類等在農、園藝作物生產之應用。包括果樹之開花調節，蔬菜花卉生產及處理。如蓮霧、釋迦、檬果、葡萄、梨等之開花調節、釋迦之貯藏及花卉之保鮮等。

**112078 Application of Plant Growth****2 E****B. S. Fuh****Regulators**

This course is to discuss the usage of plant growth regulators, including indole acetic acid (IAA), gibberellins (GA), cytokinins, abscisic acid, ethylene, growth retardants and others in crop production. The applications of these growth regulators are mainly to promote fruit trees to flowering, such as wax-apple, lemon, sugar-apple, mango, grape and pear. The other uses of plant growth regulators on flower production and keeping quality, and vegetable production, are also discussed.

**112088 植物分子檢測技術****2 選****陳幼光**

本課程的目標在增進學生對於應用在植物品種鑑定、病毒病害診斷及轉基因產品檢測等之分子檢測技術原理的認識。探討的技術包括植物 DNA 的萃取及膠體電泳、蛋白質的抽取及 SDS-PAGE 分析、植物病毒 ELISA 和 RT-PCR 診斷、生物晶片偵測技術、RAPD、SSR、AFLP 和 RFLP 分子標記的應用等。

**112088 Plant molecular Diagnostic  
Techniques****2 E****Y. K. Chen**

This course is aimed at enhancing students' knowledge in the principles of molecular techniques applied in plant cultivar identification, viral disease diagnosis, and GMO (genetically modified organism) product detection. The techniques covered include DNA purification and gel electrophoresis, protein extraction and SDS-PAGE analysis, plant virus ELISA and RT-PCR diagnosis, microarray detection, and molecular marker (RAPD, ISSR, AFLP, and RFLP) application.

**112089 植物分子檢測技術實習****1 選****陳幼光**

本實習的目的在訓練學生操作一些常用於植物品種鑑定、病毒病害診斷及轉基因產品檢測上的實驗技術。特別的技術有植物 DNA 的純化及膠體電泳、植物蛋白質的抽取及 SDS-PAGE 分析、植物病毒病害之 ELISA 和 RT-PCR 診斷、生物晶片偵測技術、RAPD、ISSR、AFLP 和 RFLP 分子標記的應用等。

**112089 Practice of Plant molecular Diagnostic Techniques**      **1**      **E**      **Y. K. Chen**

The purpose of this lab is to train students in the experimental techniques frequently used in plant cultivar identification, viral disease diagnosis, and GMO (genetically modified organism) product detection. Special techniques include DNA purification and gel electrophoresis, protein extraction and SDS-PAGE analysis, plant virus ELISA and RT-PCR diagnosis, microarray detection, and molecular marker (RAPD, ISSR, AFLP, and RFLP) application.

**112090 生物資訊學導論**      **2**      **選**      **陳又嘉**

生物資訊學課程將介紹生物資料庫及網站之建立、生物資訊的搜尋與生物資訊的分析。課程內容主要包括生物巨分子，例如蛋白質及核酸。重要議題包括文獻資料庫、序列資料庫、序列分析工具、實驗方法資源、基因拼圖資料庫、資料庫搜尋、核酸比對、微陣列晶片及蛋白質體學之分析等。

**112090 Introductory Bioinformatics**      **2**      **E**      **Y. C. Chen**

This course will introduce databases, searching and analysis of bioinformation. It focuses and discusses application of computer and internet resources to analyze biological macromolecules, such as protein and DNA. Important topics include literature database, sequence database, sequence analysis tools, protocol resource, genome mapping database, database search, nucleotide alignments, microarray chips, and proteomics.

**112072 景觀工程**      **2**      **選**      **待聘**

景觀工程是讓學生以空間構造及人間行動等分析，以自然景觀、農村景觀、河川景觀、港灣景觀及都市景觀為主題，將各種特徵及設計要素融入規劃案，再擴及其它單元。

**112072 Landscape Engineering**      **2**      **E**

The purpose of landscaping is to analysis of space structure, activities. First devoting to natural, agriculture city, river and hailer landscapes and then by these characters and elements complete proposal.

**112073 景觀工程實習**      **1**      **選**      **待聘**

每段時間設定一項景觀工程主題，由老師教授研討該主題之理論及實務，並就該主題設計實習方案與作業，由學生實際操作及觀摩；預計在學期中也安排一次校外參觀活動。

**112073 Practice of Landscape Engineering**      **1**      **E**

Stipulating a landscape engineering subject a week, besides teaching this subject's theory and practicing, also design the practice program of this subject for students to manipulate and to see. The

students arrange a out-school sight-seeing program.

### **112091 草坪管理**

**2 選**

**謝清祥**

本課程介紹草坪之種類及用途；適用於草坪之溫、熱帶各類草種，及其植株特性與繁殖方法。另，草坪之設計、規劃、整地、栽植、管理、維護、病蟲害種類及其防治方法，均逐一說明。

### **112091 Turf Management**

**2 E**

**C. H. Hsieh**

The course will introduce different types of turfgrasses and their uses especially those adapted to the temperate and tropical areas. On major turfgrass species, the plant characteristics and propagation techniques will be discussed. Turf establishment and management, design, preparation, maintenance, pest management techniques will also be discussed.

### **112092 草坪管理實習**

**1 選**

**謝清祥**

認識草坪、草類、植物學特徵及各類溫、熱帶草坪之草種、植株特性、繁殖方法，並實際讓學生進行草坪之整地、栽植、施肥、割草、通氣操作、病蟲害認知與防治等，並配合實地參觀以加深印象。

### **112092 Practice of Turf Management**

**1 E**

**C. H. Hsieh**

The practical field culture and management techniques on turf will be conducted by students to know the turfgrass plant characters, how to prepare turf sites, turfgrass propagation techniques, use of fertilizers, mowing and aerification techniques, and pest control on our practice turf farm. Field trips to golf course and seminar on turf management will also be conducted.

### **112093 經濟蔬菜生產**

**2 選**

**劉福隆**

本課程係介紹蔬菜作物中,對人類經濟關係重要之蔬菜,瞭解其種類、生理、品種,特殊之栽培管理及病蟲害之防治等,內容包括:台灣蔬菜產業之現況、台灣蔬菜產業面臨之困難、多年生蔬菜:蘆筍、竹筍、根菜類:蘿蔔、胡蘿蔔、莖菜類:洋蔥、大蒜、綠葉蔬菜:菠菜及小白菜、結球蔬菜:甘藍、結球萵苣及結球白菜、花菜類:花椰菜及青花菜、果菜類:蕃茄及青椒、豆莢類:菜豆及黃秋葵、蔓性蔬菜:西瓜及胡瓜、其它蔬菜:草莓及甜玉米等。

### **112093 Economic Vegetable Crops**

**2 E**

**F. L. Liou**

Economic vegetable production is focus on the major vegetables crops which are useful and important to human beings, This course puts great emphasis on the understanding of their taxonomy, variety, physiological habit and specific cultural technique and disease control. The contents include: Introduction of vegetable industry in Taiwan, Problems of vegetable industry in Taiwan, Perennial crops: asparagus, bamboo spears, Root vegetables: carrot, radish, Bulb crops: onion, garlic, Green vegetables: spinach, Chinese cabbage, Heading vegetables: cabbage, lettuce, Chinese cabbage, Flower crops: cauliflower, broccoli, Fruit vegetables: tomato, pepper, Beans vegetables: green beans, okra, Vine vegetable: watermelon, cucumber and Others: strawberry, sweet corns.

### **112094 園藝種苗生產技術**

**2 選**

**呂廷森、金石文**

本課程在使學生瞭解果樹，蔬菜及觀賞植物種苗生產之最新技術，課程內容包括：種苗生產之意義及重要性、園藝種苗生產及經營之特性、種子採集，儲藏及播種、無性繁殖之意義及優缺點、扦插，嫁接，壓條，分株繁殖法之利用及大量之無性繁殖、組織培養在園藝種苗生產上之應用、單倍體及多倍體植物之培養及利用、穴盤育苗之重要性及效益、自動化穴盤育苗在園藝種苗生產上之應用。

**112094 Seeding Production Techniques 2 E T. S. Lu, S.W. Chin**  
**of Horticultural Crops**

The course is make student learn the modern technique of horticultural crops seedling production. The course contents are following: Introduction: meaning and importance of seedling production, Properties and perspective of seedling production, Seed harvest, storage and planting, Meaning of asexual propagation and its characters, Propagation by cutting, grafting, layering and dividing, Application of tissue culture plantlets in horticultural crops, Culture of haploid and polyploid plants, The importance of plug production system, Automatic nursery production of horticultural plants.

**112095 園藝種苗生產技術實習 1 選 呂廷森、金石文**

使學生瞭解及實地實習各種園藝苗生產技術，除包括種子（有性）繁殖，嫁接操作，扦插繁殖外，並由組織培養技術，大量應用於加速繁殖，此外並練習自動穴盤育苗技術等。

**112095 Practice of Seeding Production 1 E T. S. Lu, S.W. Chin**  
**Techniques of Horticultural Crops**

The course is designed to provide students practical operation of seedling production techniques. Contents include not only sexual (seed) propagation, grafting and cutting, but also mericlone seedling production, and automatic plug nursery production.

**112096 作物生理 2 選 古明萱、蔡秀隆**

本課程主要針對已具有植物學及植物生理學基礎之學生，進一步就農園藝作物在田間生長發育、開花、結果、老化與環境、栽培管理之關係及對產量、品質之影響並從植物生理學之觀點、加以闡述。此外，並輔以台灣較重要之農、園藝作物為例，加以說明，使學生能瞭解實際作物生產表現（產量、品質、生理障礙等）之理論依據。

**112096 Crop Physiology 2 E M.S. Guu, S.L. Tsai**

This course is offered for those already familiar with botany and plant physiology. Topics included are: growth and development, flowering, fruiting, senescence and environment, culture and management of horticultural and agronomic crops, the effects of these factors on products and their quality from the standpoint of plant physiology. Besides, important crops in Taiwan are used as examples in order to understand basic theory of crop production (yield, quality, physiological disorders, etc).

**112097 蘭花栽培 2 選 陳福旗**

主要講授蘭花栽培之基礎知識及技能，內容分總論及各論二部份，其理論和實際並重。總論包括蘭花之分類、生長特性、栽培環境、繁殖方法、栽培管理技術、病蟲害防治、溫





園、墓園....等。

**112102 Practice of Landscape Design      1      E      Y. W. Lin**

Contents of this course are as follow:1.Drawing of landscape design (1)Topographic map (2)Site-survey map (3) Site-analysis map (4) Bubble diagrams (5) Preliminary-design map (6) Final site-development plan (master plan) 2.The instances of landscape design: (1) Home gardens design (2) Urban parks and recreation spot design (3) School gardens design (4) Roof gardens design (5) Cemetery gardens design (6) Waterside park (7) Outdoor space of public building (8) Ecological park (9) Landscape roads (10) Outdoor sittings and furniture

**112105 蔬菜育種      2      選      金石文**

本課程講授之內容為當今較新之蔬菜育種原理及方法,並選出數種重要蔬菜介紹其育種方法。內容包括：蔬菜育種之特性及目標、作物品種改良之方法、環境因子與蔬菜育種、組織培養在蔬菜育種上之應用、雜種優勢之利用、蔬菜育種各論 - 洋蔥育種、番茄育種、瓜類育種、豆類育種、甘藍育種等。

**112105 Vegetable Crop Breeding      2      E      S. W. Chin**

The course mainly covers following chapters:1.Characteristics and objective of vegetable breeding.2.Methods of crop breeding.3.The relation between vegetable breeding and environmental factors.4.The application of tissue culture in vegetable breeding.5.The application of hybrid breeding.6.Individual breeding method of vegetable crops:a.onion b.bean c.tomato d.cabbage e.cucurbits

**112106有機農業之土壤管理      2      選      王鐘和**

本課程的目的在介紹有機栽培農田土壤的性質，對作物生長的影響及維持與增進其永續生產力的管理技術。

**112106 Soil Management of Organic      2      E      C. H. Wang**  
Farming

The course is aimed at introducing the properties of organic cultivation farmland soils, its effects on plant growth, and management techniques for maintenance and promotion of soil sustainable productivity.

**112109 有機農業之土壤管理實習      1      選      王鐘和**

本課程藉由實際操作讓學生對有機農田土壤、有機質肥料及兩者與作物生產間的關係有更深刻的印象。實習內容包含：有機農場土壤樣品的採集與調製，土壤酸鹼度與電導度之測定，不同土壤 pH 值對作物生育的影響，土壤有機質和有效態養份的測定，有機質肥料用量實驗，不同堆肥成熟度對作物生育的影響等。

**112109 Practice of Soil Management of      1      E      C. H. Wang**  
Organic Farming

The laboratory course uses hands-on experiments to let students know more about properties of soils, organic fertilizers and their roles in crop production. The experiments include soil sampling and

preparation, measurement of soil pH and electric conductivity, pH effect on crop growth and development, soil organic matter and available nutrients analysis, optimizing organic fertilizer application, and compost maturity on crop growth and development.

### **112111 植物組織培養技術**

**2 選**

**陳福旗、陳幼光**

該課程著重於討論植物組織培養之各種原理與技術。並輔以最新國內外文獻，探討今後發展之方向。講授內容由培養的理念及操作時所需之器具、藥品、培養法、條件以及植物組織、細胞等培植體為材料之技術。除包括器官培養、癒合組織誘導、體胚發生、單細胞分離及培養等基礎技術外，並探討體細胞雜交，單倍體培養、基因轉移、二次代謝產物生產及種原保存等培養技術之利用價值。

### **112111 Plant Tissue Culture Techniques**

**2 E**

**F. C. Chen, Y. K. Chen**

The objective of this course is to discuss principles and methods of tissue culture, and its applications on crop production and breeding. Students are trained to obtain knowledge through seminars. This course includes methodology of plant tissue culture, medium composition and preparation, callus induction, organogenesis, somatic embryo genesis, meristem culture, gene transfer and cell isolation and culture, the production of secondary metabolites in plant biotechnology, and germplasm preservation.

### **112112 植物組織培養技術實習**

**1 選**

**陳福旗、陳幼光**

本實習著重於利用實驗室設備，由學生實際操作，並配合教學進度以了解植物組織培養技術之基礎操作方法，及熟悉諸如殺菌斧、無菌操作台、組織培養工具等之有效使用。實習內容由容器清洗、調製各種培養基開始，並以果樹、花卉、蔬菜等為培養材料，除了繼代培養、誘導癒合組織、體胚誘導、胚培養、無菌播種外，並行側芽、莖頂等器官之培養及基因轉移。

### **112112 Practice of Plant Tissue Culture**

**1 E**

**F.C. Chen, Y.K. Chen Techniques**

The objective of this course is to offer students with practices of tissue culture, including equipments such as autoclave, clean bench, centrifuge and cutting techniques. Most materials are from horticultural crops. The practices involve training of glass washing, medium preparation, callus induction, somatic embryogenesis embryo culture, virus free seedling, bud, meristem and cell separation and culture technique and gene transfer.

### **112113 特藥用作物之利用**

**2 選**

**賴宏亮**

本課程主要在講授有關特、藥用作物利用之原理及實際操作方法，使本校所生產之特、藥用作物得以利用銷售。課程內容包括基原植物，成分的單離純化技術，分析方法，製程技術，藥理，毒理，臨床試驗等。

### **112113 Utilization of Special & Medicinal Crops**

**2 E**

**H. L. Lay**

The objective of this course is to give the students more confidence in their ability for utilizing the special and medicinal crops. The main content of this course will describe the botanical origin,

identification and purification technique of component, analysis method, manufacture technique, pharmacology, toxicology, clinical trial, etc.

**112114 特藥用作物之利用實習                      1      選                      賴宏亮**

本課程包括特用作物及藥用作物之組織解剖學，基原鑑定，薄層層析法(TLC)，柱相層析法(CC)，高效液相層析法(HPLC)，傳統軟膏劑之製作，傳統蜜丸之製作，藥膳之製作及產品品評。

**112114 Practice of Utilization of                      1      E                      H. L. Lay  
Special & Medicinal Crops**

The course includes special crops and medicinal crops on their anatomy, identification of botanical origin, thin layer chromatography, column chromatography, high performance liquid chromatography, manufacture process of traditional ointment, manufacture process of traditional pill, preparation of medicinal food, and tasting of products.

**112115 花卉利用    2      選                      呂廷森**

本課程旨在講授花卉於日常生活之應用範疇，從美學原理，利用新鮮花材、盆栽植物、各種草花、小型庭園植物等，創造植物各種美化生活空間之裝飾品，以美化綠化生活環境，增加花卉用途，並實際操作，以熟悉各種裝飾品之操作方法，俾能充分發揮花卉於改善生活環境，提高生活品質之功能。課程內容涵蓋：色彩學原理、色彩效果與應用、插花史及花藝設計、東西方插花方式、花材處理方法、花卉加工 - 押花及乾燥花、組合盆栽設計原則、組合盆栽之應用、室內植栽設計與應用。

**112115 Flower Design and Decoration                      2      E                      T. S. Lu**

The objective of this course is to impart principles and application of decorating with growing plants and fresh flowers to make students familiar with the basics and techniques of floral application. Course contents include: Principles and application of colors, Application of color effect, Principles and application of flower design and decoration, Asian and western style flower arrangement, Preparation of floral materials, Flower processing - Dried flowers and pressed flowers, Elements of container garden design, Application of container garden and Interior landsplanting.

**112116 花卉利用實習    1      選**

本課程旨在配合花卉利用課程所傳授之知識與技術，讓學生實際練習，俾體會其原理並熟習各種操作技術，以期相輔相成。課程內容涵蓋：乾燥花栽培及製作、東方式花藝設計、西洋式花藝設計包括花束、花圈及胸花製作、押花製作、花卉禮品包裝、組合盆栽設計與應用。

**112116 Practice of Flower Design                      1      E  
and Decoration**

This course aims at providing students with the knowledge and skills of decorating with growing plants and fresh, processed flowers. Course contents include: Culture and application of dried flowers,

European and American style flower arrangements, Asian style flower arrangements, The making of bouquets, leis and corsages, Pressed flower techniques, Package of flower gifts and Container garden techniques.

### **112117園藝作物產期調節**

**2 選**

**顏昌瑞**

本課程主要在使學生瞭解園藝作物產期調節之重要性，現況與展望及技術。內容分調節產期之理論應用及實際技術兩方面。理論應用包括環刻、日照及低溫處理、嫁接、修剪、水分管理等，實際技術包括蘭花、百合、菊花等花卉及蓮霧、芒果、鳳梨、梨、葡萄等果樹及蔬菜之產期調節方法。

### **112117 Forcing Culture of Horticultural Crops**

**2 E**

**C. R. Yen**

This course covers basic knowledge and practical technology on forcing culture of horticultural crops. Theoretical and practical topics such as girdling, chilling, grafting, pruning, drought stress are included. Individual horticultural crops such as fruit crops, ornamentals, and vegetable will be discussed.

### **112119作物有機栽培**

**2 選**

**王鐘和**

本課程的目的在介紹水稻、蔬菜、果樹及茶等作物的有機栽培的一般管理技術，包括耕作制度、施肥及雜草管理等。

### **112119 Crop Cultivation of Organic Farming**

**2 E**

**C. H. Wang**

The course is aimed at introducing the cultivation techniques of rice, vegetables, fruit trees, and tea crop of organic farming, including cropping system, fertilization, weed control etc.

### **112120作物有機栽培實習**

**1 選**

**王鐘和**

本課程藉由實際操作讓學生對實施有機栽培的作物生產有深刻的印象與瞭解。實習的內容包含：有機栽培的農田規劃，輪作制度的設計安排，作物栽植與田間管理，土壤與施肥管理措施，雜草及病蟲害防治技術等。

### **112120 Practice of Crop Cultivation of Organic Farming**

**1 E**

**C. H. Wang**

The laboratory course used hands-on experiments to let students know more about Organic cultivated of crops. The experiments include : Organic farming design, rotation system design and arrangement, planting practices, soil and fertilization management, and weed, pests and diseases control, etc.

### **112080 景觀規劃**

**2 選**

**林雅文**

將各種配置計劃的理論與原則配合案例說明，大型基地如校園、風景區等之規劃皆包括在內，並兼顧環境規劃理論及方法，以及環境資源之分析方法，尤重於景觀視覺之評估及利用。

### **112080 Landscape Planning**

**2 E**

**Y. W. Lin**

Let the students to learn the space arrangement theories and the utilization of visual resource. The

space may include from general little scale outdoor space to many types of park and more large scale sites like campus and scenic areas...etc. And let the students learn how to handle and resolve the problems in planning.

**112081 景觀規劃實習**

**1 選**

**林雅文**

配合正課內容，以案例練習及討論方式，熟習實際規劃技能。

**112081 Practice of Landscape Planning 1 E**

**Y. W. Lin**

The purpose of this course is to provides practicing experience which the students have learned the principles from classroom instruction. The students would be assigned to observe , survey . and analyze the site, then to plan and design the landscape. This course also put emphasis on visual scenery resources management.



## 四年制 農園生產系 產學攜手專班

專業必修科目 核心能力 (●相關 ◎部分相關)

中 文 科 目 名 稱  英	學 分 數	核心能力		
		具備熱帶農藝、園藝作物、園林景觀專業知識及實務操作之能力。	具備探索農園作物科學新知的興趣與熱忱，以擴展就業潛力。	具備團隊合作、務實、溝通、抗壓能力及責任心。
植物學 Botany	2	●	●	
植物學實習 Practice of Botany	1	●	●	◎
園藝學 Horticultural Science	2	●	●	
作物學 Science of Field Crops	2	●	●	
植物繁殖技術 Plant Propagation Techniques	2	●	●	
植物繁殖技術實習 Practice of Plant Propagation Techniques	1	●	●	◎
有機化學 Organic Chemistry	2	●	●	
有機化學實驗 Organic Chemistry Lab.	1	●	●	◎
植物生理學 Plant Physiology	3	●	●	
植物生理學實驗 Plant Physiology Lab.	1	●	●	◎
花卉學 Floriculture	2	●	●	
花卉學實習 Practice of Floriculture	1	●	●	◎
蔬菜學 Olericulture	2	●	●	
蔬菜學實習 Practice of Olericulture	1	●	●	◎
果樹學 Pomology	2	●	●	
果樹學實習 Practice of Pomology	1	●	●	◎
生物化學 Biochemistry	2	●	●	
生物化學實驗 Biochemistry Lab.	1	●	●	◎

中 文 科 目 名 稱  英	學 分 數	核心能力		
		具備熱帶農藝、園藝作物、園林景觀專業知識及實務操作之能力。	具備探索農園作物科學新知的興趣與熱忱，以擴展就業潛力。	具備團隊合作、務實、溝通、抗壓能力及責任心。
土壤與肥料 Soil and Fertilizer	2	●	●	
土壤與肥料實習 Practice of Soil and Fertilizer	1	●	●	◎
生物技術 Biotechnology	2	●	●	
作物病害管理與診斷技術 Management and Identification Techniques of Plant Diseases on Crop Plant	2	●	●	
作物病害管理與診斷技術實習 Practice of Management and Identification Techniques of Plant Diseases on Crop Plant	1	●	●	◎
特用作物學 Special Crops Science	2	●	●	
特用作物學實習 Practice of Special Crops Science	1	●	●	◎
作物蟲害管理與診斷技術 Management and Identification Techniques of Plant Insect Pests on Crop Plant	2	●	●	
作物蟲害管理與診斷技術實習 Practice of Management and Identification Techniques of Plant Insect Pests on Crop Plant	1	●	●	◎
遺傳學 Genetics	2	●	●	
遺傳學實習 Practice of Genetics	1	●	●	◎
農園產品處理學 Postharvest Technology of Agricultural Products	2	●	●	
農園產品處理學實習 Practice of Postharvest Technology of Agricultural Products	1	●	●	◎
糧食作物學 Food Crops	2	●	●	
糧食作物學實習 Practice of Food Crops	1	●	●	

中 文 科 目 名 稱  英	學 分 數	核心能力		
		具備熱帶農藝、園藝作物、園林景觀專業知識及實務操作之能力。	具備探索農園作物科學新知的興趣與熱忱，以擴展就業潛力。	具備團隊合作、務實、溝通、抗壓能力及責任心。
校外實習 Practice of Industrial Training	2	●	●	◎
專題討論 Seminar	2	●	●	◎
作物育種學 Crop Breeding	3	●	●	
作物育種學實習 Practice of Crop Breeding	1	●	●	◎
農業經營 Agri-Business Management	2	●	●	◎
農園藝場實習（1） Practice of Agri-Horticultural Farm（1）	2	●	●	◎
農園藝場實習（2） Practice of Agri-Horticultural Farm（2）	2	●	●	◎
合 計	66			

(五)專業選修科目

中 文 科 目 名 稱  英	學 分 數	核心能力		
		具備熱帶農藝、園藝作物、園林景觀專業知識及實務操作之能力。	具備探索農園作物科學新知的興趣與熱忱，以擴展就業潛力。	具備團隊合作、務實、溝通、抗壓能力及責任心。
農業機械 Agricultural Machinery	2	●	●	
農業機械實習 Practice of Agricultural Machinery	1	●	●	◎
生態學 Ecology	2	●	●	
微生物學 Microbiology	2	●	●	
微生物學實習 Practice of Microbiology	1	●	●	
農業氣象學 Agricultural Meteorology	2	●	●	
作物分類學 Systematic Taxonomy in Economic Crops	2	●	●	
作物分類學實習 Practice of Systematic Taxonomy in Economic Crops	1	●	●	
有機農業概論 General Discussion of Organic Farming	3	●	●	
景觀植物 Landscape Plants	2	●	●	
景觀維護與管理 Landscape Maintenance and Management	2	●	●	
香草科學 Science of Aromatic Herbs	2	●	●	
香草科學實習 Practice of Aromatic Herb Science	1	●	●	◎
食藥用菌菇栽培 Cultivation of Edible and Medicinal Mushrooms	2	●	●	
食藥用菌菇栽培實習 Practice of Cultivation of Edible and Medicinal Mushrooms	1	●	●	◎
造園學 Landscape Architecture	2	●	●	
造園學實習 Practice of Landscape Architecture	1	●	●	◎

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設施園藝 Horticultural Production Under Structures	2	●	●	
設施園藝實習 Practice of Horticultural Production Under Structures	1	●	●	
作物營養管理與診斷技術 Crop Nutrition Management and Diagnostic Techniques	2	●	●	
作物營養管理與診斷技術實習 Practice of Crop Nutrition Management and Diagnostic Techniques	1	●	●	◎
熱帶亞熱帶果樹學 Tropical and Subtropical Fruit Production	2	●	●	
熱帶亞熱帶果樹學實習 Practice of Tropical and Subtropical Fruit Production	1	●	●	◎
有機質肥料生產 Production of Organic Fertilizers	2	●	●	
有機質肥料生產實習 Practice of Production of Organic Fertilizers	1	●	●	◎
造園技術 Landscape Technology	2	●	●	
造園技術實習 Practice of Landscape Technology	1	●	●	◎
觀賞植物生產技術 Ornamental Plants	2	●	●	
觀賞植物生產技術實習 Practice of Ornamental Plants	1	●	●	◎
植物生物技術 Plant Biotechnology	2	●	●	
植物生物技術實習 Practice of Plant Biotechnology	2	●	●	◎
經濟果樹 Economic Fruit Crops	2	●	●	
經濟果樹實習 Practice of Economic Fruit Crops	1	●	●	◎

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植物生長調節劑應用 Application of Plant Growth Regulators	2	●	●	
植物分子檢測技術 Plant Molecular Diagnostic Techniques	2	●	●	
植物分子檢測技術實習 Practice of Plant Molecular Diagnostic Techniques	1	●	●	◎
生物資訊學導論 Introduction of Bioinformatics	2	●	●	
景觀工程 Landscape Engineering	2	●	●	
景觀工程實習 Practice of Landscape Engineering	1	●	●	◎
草坪管理 Turf Management	2	●	●	
草坪管理實習 Practice of Turf Management	1	●	●	◎
經濟蔬菜生產 Economic Vegetable Crops	2	●	●	
園藝種苗生產技術 Seedling Production Techniques of Horticultural Crops	2	●	●	
園藝種苗生產技術實習 Practice of Seedling Production Techniques of Horticultural Crops	1	●	●	◎
作物生理 Crop Physiology	2	●	●	
蘭花栽培 Orchid Culture	2	●	●	
蘭花栽培實習 Practice of Orchid Culture	1	●	●	◎
休閒農業 Leisure Agriculture	2	●	●	
景觀設計 Landscape Design	2	●	●	
景觀設計實習 Practice of Landscape Design	1	●	●	◎



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蔬菜育種 Vegetable Crop Breeding	2	●	●	
有機農業之土壤管理 Soil Management of Organic Farming	2	●	●	
有機農業之土壤管理實習 Practice of Soil Management of Organic Farming	1	●	●	◎
植物組織培養技術 Plant Tissue Culture Techniques	2	●	●	
植物組織培養技術實習 Practice of Plant Tissue Culture Techniques	1	●	●	◎
特藥用作物之利用 Utilization of Special & Medicinal Crops	2	●	●	
特藥用作物之利用實習 Practice of Utilization of Special & Medicinal Crops	1	●	●	◎
花卉利用 Flower Design and Decoration	2	●	●	
花卉利用實習 Practice of Flower Design and Decoration	1	●	●	◎
園藝作物產期調節 Forcing Culture of Horticultural Crops	2	●	●	
作物有機栽培 Crop Cultivation of Organic Farming	2	●	●	
作物有機栽培實習 Practice of Crop Cultivation of Organic Farming	1	●	●	◎
景觀規劃 Landscape Planning	2	●	●	
景觀規劃實習 Practice of Landscape Planning	1	●	●	◎
合 計	104			