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農園生產系博士班

(一)教育目標

根據技職教育體系之教育特性，同時配合政府農業政策與產業需求，教授農、園藝學生產及植物醫學之理論與技術，以培育具現代化之農、園藝生產、管理、經營及規劃與植物醫學之高級技術專業人才。

(二)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	
專題討論 Seminar	4	1	1	1	1	
博士論文 Dissertation	12			6	6	
合 計	16	1	1	7	7	

(三)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	
專題研究 Special Research Project	2	1	1			
電子顯微鏡技術 Electronic Microscopy	2	2				
植物化學生態學 Phytochemical Ecology	2	2				
真菌學特論 Special Topics on Mycology	3	3				
植物病毒學特論 Special Topics on Plant Virology	2	2				
植物有害生物管理學特論 Special Topics on Management of Plant Pests	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	
高等特藥用作物學 Advanced Special and Medicinal Crops	2	2				
高等園產品處理 Advanced Postharvest Technology of Horticultural Crops	2	2				
熱帶果樹特論 Special Topics on Tropical Fruit Crops	3	3				
植物發育調控特論 Special Topics on the Mechanisms of Plant Development	2	2				
植物土壤傳播病害 Plant Soil-borne Disease	2	2				
熱帶作物病害特論 Special Topics on Tropical Crop Diseases	2		2			
昆蟲病理學特論 Special Topics on Insect Pathology	2		2			
昆蟲學特論 Special Topics on Advanced Entomology	2		2			
分子植物病理學特論 Special Topics on Molecular Plant Pathology	3		3			
植物健康與檢疫 Plant Health and Quarantine	2		2			
作物抗蟲育種 Crop Breeding Against Insect Pests	2		2			
植物遺傳特論 Special Topics on Plant Genetics	2		2			
微生物之開發與利用 Development and Application of Microorganisms	2		2			
食藥用菌菇特論 Special Topic on the Edible and Medicinal Mushrooms	2		2			
種子生理學特論 Special Seed Physiology	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	
果樹生殖生長 Reproductive growth of fruit trees	2		2			需先修畢果樹學、植物生理學
科學論文寫作與發表 Writing and publishing a scientific paper	2		2			
高等作物育種學 Advanced Crop Breeding	2		2			
植物細胞生物學 Plant Cell Biology	2		2			
作物抗病育種 Crop Breeding Against Crop Diseases	2			2		
螨蟬學特論 Special Topics on Acarology	2			2		
植物流行病學 Plant Disease Epidemiology	2			2		
熱帶作物蟲害特論 Special Topics on Tropical Crop Insect	2			2		
數值分類學 Numerical Taxonomy	2			2		
真菌分子遺傳學特論 Special Topics on Fungal Molecular Genetics	3			3		
血清學特論 Special Topics on Serology	3			3		
迴歸分析 Regression Analysis	2			2		
高等植物營養學特論 Topics on Advanced of Plant Nutrition	2			2		
作物根系生理 Physiology of the Crop Root System	2			2		
農藥毒理學特論 Special Topics on Pesticides and Toxicology	2				2	
雜草特論 Special Topics on Weed Science	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	
昆蟲媒病學特論 Special Topics on Insect Vector and Plant Diseases	1				1	
高等生物防治學 Advanced Biological Control	2				2	
植物逆境生理學特論 Special Topics on Plants Stress Physiology	2				2	
取樣理論與方法 Sampling Theories and Technigues	2				2	
土壤學特論 Advanced Soil Science	2				2	
菌根學特論 Mycorrhizae	2				2	
植物組織構造與機能特論 Special Topics on the Structure and Function of Plant Tissues	2				2	
合 計	92	23	30	22	17	

國立屏東科技大學 農園生產系 博士班 課程規劃表

學年	第一學年				第二學年				學分總計
學期	第一學期		第二學期		第一學期		第二學期		
修別	科目	學分	科目	學分	科目	學分	科目	學分	
必修	專題討論	1	專題討論	1	專題討論 博士論文	1 6	專題討論 博士論文	1 6	
小計		1		1		7		7	16
選修	專題研究	1	專題研究	1	作物抗病育種	2	農藥毒理學特論	2	
	電子顯微鏡技術	2	熱帶作物病害特論	2	螨蟬學特論	2	雜草特論	2	
	植物化學生態學	2	昆蟲病理學特論	2	植物流行病學	2	昆蟲媒病學特論	1	
	真菌學特論	3	昆蟲學特論	2	熱帶作物蟲害特論	2	高等生物防治學	2	
	植物病毒學特論	2	分子植物病理學特論	3	數值分類學	2	植物逆境生理學特論	2	
	植物有害生物管理學特論	2	植物健康與檢疫	2	真菌分子遺傳學特論	3	取樣理論與方法	2	
	高等特藥用作物學	2	作物抗蟲育種	2	血清學特論	3	土壤學特論	2	
	高等園產品處理	2	植物遺傳特論	2	迴歸分析	2	菌根學特論	2	
	熱帶果樹特論	3	微生物之開發與利用	2	高等植物營養學特論	2	植物組織構造與機能特論	2	
	植物發育調控特論	2	食藥用菌菇特論	2	作物根系生理	2			
	植物土壤傳播病害	2	種子生理學特論	2					
			果樹生殖生長*(註2)	2					
			科學論文寫作與發表	2					
			高等作物育種學	2					
			植物細胞生物學	2					
小計		23		30		22		17	92

註：1.本系學生至少應修滿 30 學分始得畢業(其中必修應修 16 學分，選修應修 14 學分)

2.需先修畢果樹學、植物生理學。

農園生產系博士班

Department of Plant Industry

課程代號 Course Number	科目名稱(中文) Course (Chinese)	學分 Credit	科目名稱(英文) Course (English)	頁次 Page
專業必修科目 Required Courses				
119001	博士論文	6	Dissertation	
119002	專題討論	1	Seminar	
專業選修科目 Elective Courses				
119003	專題研究	1	Special Research Project	
119004	電子顯微鏡技術	2	Electronic Microscopy	
119005	植物化學生態學	2	Phytochemical Ecology	
119006	真菌學特論	3	Special Topics on Mycology	
119007	植物病毒學特論	2	Special Topics on Plant Virology	
119008	植物有害生物管理學特論	2	Special Topics on Management of Plant Pests	
119009	高等特藥用作物學	2	Advanced Special and Medicinal Crops	
119010	高等園產品處理	2	Advanced Postharvest Technology of Horticultural Crops	
119011	熱帶果樹特論	3	Special Topics on Tropical Fruit Crops	
119012	植物發育調控特論	2	Special Topics on the Mechanisms of Plant Development	
119013	植物土壤傳播病害	2	Plant Soil-borne Disease	
119014	熱帶作物病害特論	2	Special Topics on Tropical Crop Diseases	
119015	昆蟲病理學特論	2	Special Topics on Insect Pathology	
119016	昆蟲學特論	2	Special Topics on Advanced Entomology	
119017	分子植物病理學特論	3	Special Topics on Molecular Plant Pathology	
119018	植物健康與檢疫	2	Plant Health and Quarantine	
119019	作物抗蟲育種	2	Crop Breeding Against Insect Pests	
119020	植物遺傳特論	2	Special Topics on Plant Genetics	
119021	微生物之開發與利用	2	Development and Application of Microorganisms	
119022	食藥用菌菇特論	2	Special Topic on the Edible and Medicinal Mushrooms	
119023	種子生理學特論	2	Special Seed Physiology	
119024	果樹生殖生長	2	Reproductive growth of fruit trees	
119025	科學論文寫作與發表	2	Writing and publishing a scientific paper	
119026	高等作物育種學	2	Advanced Crop Breeding	
119027	植物細胞生物學	2	Plant Cell Biology	
119028	作物抗病育種	2	Crop Breeding Against Crop Diseases	
119029	螨蟬學特論	2	Special Topics on Acarology	
119030	植物流行病學	2	Plant Disease Epidemiology	
119031	熱帶作物蟲害特論	2	Special Topics on Tropical Crop Insect	

119032	數值分類學	2	Numerical Taxonomy
119033	真菌分子遺傳學特論	2	Special Topics on Fungal Molecular Genetics
119034	血清學特論	2	Special Topics on Serology
119035	迴歸分析	2	Regression Analysis
119036	高等植物營養學特論	2	Topics on Advanced of Plant Nutrition
119037	作物根系生理	2	Physiology of the Crop Root System
119038	農藥毒理學特論	2	Special Topics on Pesticides and Toxicology
119039	雜草特論	2	Special Topics on Weed Science
119040	昆蟲媒病學特論	1	Special Topics on Insect Vector and Plant Diseases
119041	高等生物防治學	2	Advanced Biological Control
119042	植物逆境生理學特論	2	Special Topics on Plants Stress Physiology
119043	取樣理論與方法	2	Sampling Theories and Technigues
119044	土壤學特論	2	Advanced Soil Science
119045	菌根學特論	2	Mycorrhizae
119046	植物組織構造與機能特論	2	Special Topics on the Structure and Function of Plant Tissues

農園生產系博士班

Graduate Institute of Plant Industry

一、必修科目 Required Courses

- 119001 博士論文 12 必 各教師
利用完整執行之試驗、觀察或實務操作，使學生能徹底了解並應用修課之知識、練習口頭報告、與科學論文之寫作。老師則藉由討論，提供改進之意見。
- 119001 Dissertation 12 R All faculties
After a well-designed project being properly conducted by students, he/she will be asked to give a oral presentation and submit the thesis before a deadline. Knowledge acquired during the study should be made use of sufficiently in the preparation of the thesis. Frequent and intensive discussions among teachers and students will be arranged to improve the quality of his/her research.
- 119002 專題討論 4 必
本課程旨在訓練研究生對資料蒐集、整理及表達的能力。學生選擇與農園科學或碩士論文有關的題目，蒐集文獻、閱讀、整理成摘要，然後提出報告討論；此外將邀請產官學界學者專家做專題演講，以瞭解學術研究及產業趨勢。
- 119002 Seminar 4 R
This course is designed to train graduate students the ability in searching literature, organization of material and presentation. Students are required to present specific topics in the field of plant industry or related to their thesis, by searching and reviewing literature or reporting result of their experiments. This presentation is scheduled for every student at least once a semester. Experts or scholars from academic, agricultural institutions and industry will be invited to present about the status and trend of agriculture.

二、選修科目 Elective Courses

- 119003 專題研究 2 必 輪授、上下
本課程由教師輔導學生選定其有興趣之研究題目，進行文獻收集、討論及實驗設計，並將研究結果撰寫報告。
- 119003 Special Research Project 2 S Assigned, F & S
Each student will select a research topic of interest. He or she will be requested to search reference, discuss with faculty members, and design experiment. Each student is required to submit a final report of research results
- 119004 電子顯微鏡技術 2 選 陳滄海、上
本課程主要介紹電子顯微鏡的基本原理與應用 內容包括兩部分：(一)穿透式電子顯微鏡之構造，材料之固定與包埋、超薄切片、負染色與金屬投影(二)掃描式電子顯微鏡之構造，樣品製作、臨界點乾燥等。
- 119004 Electronic Microscopy 2 S T. H. Chen, F
The course offers a complete understanding of the principle and application of electron microscope. The contents include two sections: 1.construction of transmission electron microscope(TEM), chemical fixation、embedding、staining and metal shadowing. 2.construction of scanning electron microscope (SEM), preparation of specimen for SEM.

119005 植物化學生態學 2 選 待聘、上
 本課程是為加強博士班學生對於植物、動物、昆蟲間交互作用之研究，課程內容包含有：植物化學生態學、酚酸化合物之萃取及鑑定、類黃素之萃取、純化及鑑定、可見光紫外光譜、質譜及核磁共振光譜之解析、酚酸類化合物之生態角色、類黃素之生態角色、松烯類化合物之萃取、純化及鑑定、松烯類化合物之生態角色、植物鹼之萃取、純化及鑑定、植物鹼之生態角色、相生相剋物質之簡介、真菌毒物質及黃麴毒素、費洛蒙及其他化學傳訊素、植物對外來攻擊之防禦物質、植物-昆蟲-動物之交互作用。

119005 Phytochemical Ecology 2 S, F
 Phytochemical Ecology is researching about plant-insect-animal interactions for Ph. D. students. The curriculum included: phytochemical ecology, phenolics: isolation and identification, flavonoids: isolation, and identification, UV-Visible, MS, NMR spectroscopic interpretation, ecological roles of phenolic compounds, ecological roles of flavonoids, terpenoids: isolation, and identification, ecological role of terpenoids, alkaloids: isolation, and identification, ecological roles of alkaloids, allelochemicals in general, mycotoxins and aflatoxins, pheromones, kairomone, and allomones, phytoalexins, and co-evolution: plant-insect-animal interactions

119006 真菌學特論 3 選 梁文進、上
 本課程主要討論自然環境中真菌生活史與其他生物間之相互關係。尤其是真菌在環境中生長發育生殖之消長，所受到其他生物影響之現象即機制，討論如何利用環境微生物以抑制植物病原真菌以達到生物防治效果，及如何利用環境微生物以促進可利用真菌生產，如食藥用菇蕈類之子實體生產。

119006 Special Topics on Mycology 3 S W. J. Liang, F
 This course primarily discusses the interactions between fungi and microorganisms in nature environment, especially, the phenomena and mechanisms of growth, development and reproduction of fungi inferenced by other microbes. The course also introduces the utilization of antagonists to inhibit the plant pathogenic fungi for biocontrol of plant diseases, and the utilization of microbes to promote the fruiting-body yields of usable fungi, such as the edible and medicinal mushrooms.

119007 植物病毒學特論 2 選 陳滄海、上
 本課程主要強調由分子層次討論植物病毒的蛋白質構造與核酸組成，基因體之表現及功能，病毒在植物體內之增殖與移行、媒介傳播之機制，遺傳、變異與演化，以及病毒之分子鑑定、檢測新技術之進展與防治。

119007 Special Topics on Plant Virology 2 S T. H. Chen, F
 The course gives a comprehensive molecular biology information of plant viruses to help the students to get much theoretical and practical knowledge of plant virology. The contents cover the molecular structure of virion and genome, expression and functions of viral genomes, mechanisms of virus replication, movement and transmission, variation and evolution, and new advances on technology of virus identification, detection and control.

119008 植物有害生物管理學特論 2 選 鄭秋雄、上
 本課程主要介紹生物技術應用於植物病害之診斷、檢疫及防治等病害管理。內容包括基因重組及基因轉殖技術、細胞融合技術、細胞培養技術、組織培養技術（如莖頂培養、胚培養、花藥培養、微體繁殖）等應用於植物病害診斷、病害檢疫、病害防治與抗病、抗藥、抗環境逆境品種之篩選育種。

259008 Special Topics on Management of Plant Pests 2 S C. C. Cheng, F
 This course is to introduce biotechnology applied in diagnosis, quarantine and control of plant disease, which includes the technologies of recombinant DNA and gene transfer, cell fusion, cell

culture, tissue culture (such as meristem culture, embryo culture, anther culture and micropropagation) etc. applied in diagnosis, quarantine, and control of plant disease and selection and breeding of plant disease-resistant, drug-resistant and stress-resistant varieties.

119009 高等特藥用作物學 2 選 賴宏亮、上

本課程以講授特用作物及藥用植物之生產技術與利用，內容包括：植物基原鑑定、GAP 栽培技術、組織培養大量繁殖、細胞懸浮培養二次代謝、成分單離純化技術、高效液相層析法定性定量分析技術、中草藥製程技術開發及其他。

119009 Advanced Special and Medicinal Crops 2 S H. L. Lay, F

This course is to introduce production technique and application of special and medicinal crops. The content of topics including identification technique of botanical origin, good agriculture practice of cultivation technique, mass propagation by tissue culture, inducing secondary metabolites by cell suspension culture, Identify and purify components from herbal medicines, qualitative and quantitative analysis by high performance liquid chromatography, development of manufacture process technique for herb medicines, and others.

119010 高等園產品處理 2 選 柯立祥、上

本課程主要在強調最新有關新鮮水果、蔬菜及花卉之採後生理、處理及貯藏技術之進展。課程中除討論目前可應用於所有之新鮮園產品之採後處理及貯藏技術之外，未來採後處理之研究方向與趨勢，亦一併專討。

119010 Advanced Postharvest Technology of Horticultural Crops 2 S L. S. Ke, F

This course is to emphasize the recent advances in postharvest physiology, handling and storage technology for fresh fruits, vegetables and ornamentals. The principles discussed in this course are applicable to postharvest handling and storage of fresh horticultural crops worldwide. The future research needs in postharvest biology and technology are also discussed.

119011 熱帶果樹特論 3 選 顏昌瑞、上

本課程針對熱帶果樹之產地與地區、台灣與世界熱帶果樹之生產、種原交流、品種及育種、繁殖—無性與有性、芽接與嫁接之地區差異、砧木之演進、生育與環境、栽培管理—傳統與現代、產期調控—從熱帶柑橘到龍眼之品種、產能—從芒果之授粉昆蟲飼養至百香果之自交親和性、營養—與品質及生理障礙、開花生理與地區效應、品質控制—環境與栽培技術之效應、採後處理與檢疫、國際市場與障礙等加以論述。

259011 Special Topics on Tropical Fruit Crops 3 S C. R. Yen, F

The course covers special topics of tropical fruit crops on production and locations, fruit production in Taiwan and world, germplasm collections and breeding, propagation—budding, grafting and rootstock, growth and environments, traditional and current cultural managements, forcing culture in the tropics and subtropics, bearing efficiency, nutrition and quality, flowering physiology and location effect, postharvest and quarantines, international trade and barrier.

119012 植物發育調控特論 2 選 陳福旗、上

本課程討論植物生長與發育之分子調控機制，針對發育上特定主題由分子層次深入探討調控之內在與外在因子對於植物發育之影響。討論主題包括：研究工具、突變種分析技術、胚發育、種子發育、幼苗生長、生殖生長、光型態發生、逆境下之生理分生變化，系統生物學與發育之關係等。

119012 Special Topics on the Mechanisms of Plant Development 2 S Chen, F. C., F

The course discusses molecular mechanisms of plant growth and development, focusing on specific topics in depth related to internal as well as external factors which affect growth and development. The topics cover the following aspects: tools of research, mutant analysis, embryo development, seed development, seedling growth, reproductive growth, photomorphogenesis,

physiological and molecular changes during stress responses, system biology and development.

- 119013 植物土壤傳播病害 2 選 陳麗鈴、上
本課程介紹主要的土壤傳播病害，包括病徵、致病病原、寄主與病原菌及環境因素與病勢發展之相互關係；同時討論本類病害之綜合防治措施。
- 119013 Plant Soil-borne Disease 2 S Chern, L. L, F
This course is to introduce important soil-borne diseases. The contents included are:1.Disease symptoms 2.Pathogens which caused soil-borne diseases 3.Host-pathogen interaction 4.Environmental factors vs. Diseases development 5. Integrated management of soil-borne diseases.
- 119014 熱帶作物病害特論 2 選 鄭秋雄、下
本課程首先介紹熱帶農業體系之特性，進而論及熱帶作物田間與採收儲運期之病害種類、發生生態，最後再探討經濟有效之防治方法。範圍涵蓋穀類作物、豆科作物、根莖作物、蔬菜、花卉、飼料作物、藥草及棉、麻、油脂類特用作物等。
- 119014 Special Topics on Tropical Crop Diseases 2 S C. C. Cheng, S
The course offers a complete understanding of the characteristics of tropical crop diseases and of how to manage the diseases. The diseases of the tropical crops, e.g., cereals, food legumes, root and tuber crops, vegetables, flowers, forages, drug crops, fiber crops, and oil crops will be discussed in detail.
- 119015 昆蟲病理學特論 2 選 張萃嫻、下
本課程主要介紹在自然界中會使昆蟲致病之病原微生物，包括細菌、真菌、病毒、蟲生線蟲及原生動物等，分別介紹各種病原微生物之研究發展史、分類地位、寄主範圍、入侵寄主昆蟲體之途徑、致病原理及其在害蟲防治上之應用。
- 119015 Special Topics on Insect Pathology 2 S T. Y. Chang, S
The objective of this course is to introduce the entomopathogen in nature. The bacteria, fungus, virus, entomopathogenic nematode and protozoan are included. The contents of this course are to introduce the history, taxonomy, host range, invaded gateway on insect, susceptibility and application to insect pest control of entomopathogen respectively.
- 119016 昆蟲學特論 2 選 辛竹英、下
介紹昆蟲的構造及其功能，強調昆蟲的構造在環境中的適應與在演化上的重要性。
- 119016 Special Topics on Advanced Entomology 2 S C. Y. Hsin, S
Introduce the functional anatomy and ultrastructure of insects, with emphasis on adaptation and evolutionary significance.
- 119017 分子植物病理學特論 3 選 梁文進、下
本課程是由分子層次探討植物病變過程、病原與寄生植物間之相互作用，及植物抗病機制等相關基因表現之誘導及抑制調控，相關信號分子、機能蛋白等引起之生理代謝及細胞變化等新知，尤其注重分子生物科技應用於植物病理學的發展。
- 119017 Special Topics on Molecular Plant Pathology 3 S W. J. Liang, S
This course is intended to review and discuss the regulation of gene expression in pathogenesis of plant disease, interaction between pathogen and host plant and mechanism of disease resistance from molecular level, and the signal and protein molecules mediated in the changes of cell physiological metabolism. The development of plant pathology associated with molecular biology will be specially discussed.
- 119018 植物健康與檢疫 2 選 下

本課程之目的，在使學生具國際植物健康管理的專業知識，避免有害生物及病害的入侵，以保護植物。在國際貿易逐年增加的今日，本知識為重要的基本知識。課程內容包括國際植物衛生控制；國際植物保護組織的架構與運作；植物衛生規範標準之雙邊或多邊協商；入侵有害生物與病害的剷除；檢疫證明與商品銷售計畫及診斷與有害生物風險評估。

119018 Plant Health and Quarantine 2 S S

The purposes of this course are to give students the knowledge of international plant health management to protection for plants from invasive pests and diseases, which is essential in the increasingly free-trade environment of today. Course contents include the international phytosanitary controls; structure and operation of national plant protection organizations; negotiation of phytosanitary measures, both bilaterally and multilaterally; eradication and containment of invasive pests and diseases; certification and marketing schemes; diagnosis and pest risk analysis.

119019 作物抗蟲育種 2 選 下

作物抗蟲育種的目的是增加植物對昆蟲之抗性，植物本身對昆蟲的侵害所具有的容忍忌避及復原的特性；在類似環境下，同種中之其他個體對這些害虫之危害所造成的損失，要遠比前者為大。改良成為理想的品種，往往需要以人為的方法除去或增加某些因子，以增加抗性。

119019 Crop Breeding Against Insect Pests 2 S, S

Resistance of plants to insects is the property that enables a plant to avoid, tolerate or recover from injury by insect populations that would cause greater damage to other plants of the same species under similar environmental conditions. Improvement of the desired product frequently involved the intentional reduction of factors that coincidentally, were involved in mechanism of resistance.

119020 植物遺傳特論 2 選 陳福旗、陳幼光、下

本課程的設計主要在使博士班學生有機會探討通常不會在一般課程中涵蓋的與植物遺傳有關的古典的或現代的論文。可能的主題包括數量性狀基因座定位、可轉座片段、染色體操作、細胞質遺傳和後生遺傳等。

119020 Special Topics on Plant Genetics 2 S F. C. Chen, Y. K. Chen, S

This course is designed to provide Ph.D. students with the opportunity to present and discuss papers, both in modern and classical, related to the field of plant genetics, which are not normally covered by regular course offerings. Possible topics include quantitative trait loci (QTL) mapping, transposable elements, chromosome manipulation, cytoplasmic inheritance, and epigenetics.

119021 微生物之開發與利用 2 選 王均琍、下

課程主要在介紹有益於作物生長與產量之微生物，講授其研發及應用之方法。內容包括：微生物肥料，如固氮菌、菌根菌與溶磷菌等、微生物殺蟲劑，如蘇力菌與黑殭菌等、微生物殺菌劑，如木黴菌與螢光菌等之應用與研發方法。

119021 Development and Application of Microorganisms 2 S C. L. Wang, S

This course is designed to acquaint students with the microorganisms that are beneficial for crop growth and production. The contents mainly include the research and application of: microbiofertilizer, such as nitrogen fixation microorganisms, mycorrhizal fungi and phosphorus solubilizing microorganisms, microbiotic insecticides, such as *Bacillus thuringiensis*, *Metarhizium anisopliae* and microbiotic fungicides, such as *Trichoderma* sp. and *Pseudomonas fluorescens*.

119022 食藥用菌菇特論 2 選 王均琍、下

本課程主要在講授有關新興之食藥用菌菇，其形態、構造、生活史特性與生理功能。介紹其液體發酵與固體發酵培養之原理、方法與產品應用。

119022 Special Topic on the Edible and Medicinal Mushrooms 2 S C. L. Wang, S

This course is aimed at introducing the characteristics of the morphology, structure, life cycle and physiological functions of some edible, medicinal mushrooms. The principles, techniques and products applications of liquid fermentation and solid fermentation are discussed.

119023 種子生理學特論 2 選 古明萱、下

本課程主要介紹種子品質在基礎及應用上之生理觀念，課程內容包括種子生命力、種子活力，種子品質與環境，耐貯藏型種子貯藏，不耐貯型種子貯藏，種子衰敗機制，種子品質對作物生長、產量影響。

119023 Special Seed Physiology 2 S M. S. Guu, S

The course offers on physiological aspects of seed quality in the basic and applied levels. The topics content include: seed viability, seed vigor, production environment and seed quality, storage of orthodox seeds, storage of recalcitrant seeds, mechanisms of seed deterioration, influence of seed quality on crop growth and yield.

119024 果樹生殖生長 2 選 張哲嘉、下

本課程旨使研究生進一步瞭解果樹生殖生長之機制與影響因子，俾為穩定產量及調控品質之生理基礎。課程之內容包括花芽分化、發育與開花，授粉、受精與著果，生理落果，果實之生長與發育，隔年結果及以栽培技術促進果樹開花結實的實例與研究進展。

119024 Reproductive growth of fruit trees 2 S, J. C. Chang, S

The course is designed to offer graduate students a better understanding about the mechanism and the regulation of reproductive growth of fruit crops, and the physiological aspects on yield and quality control in fruit production. Essential flowering and fruiting processes i.e., flower differentiation and development, anthesis, pollination, fertilization, fruit set, physiological drop, fruit growth and development, and alternative bearing will be covered. Examples and up to date research progress on improvement of flowering and fruiting will also be discussed.

119025 科學論文寫作與發表 2 選 張哲嘉、下

本課程旨在建立論文寫作的正確觀念與要領，俾發表優良論文。授課內容包括科學研究的精神與方法、論文之要件與邏輯、架構與倫理、種類與格式、文字內容與撰寫要領、圖與表的製作及編排、文獻蒐集與評估、參考文獻的引用、投稿對象的選擇以及由投稿到出版的交涉過程(以實例說明稿約、線上或紙本投稿、同儕審稿、退稿、修改或接受、校稿、出版)。

119025 Writing and publishing a scientific paper 2 S, J.C. Chang, S

This course is designed to introduce graduate students to the process of writing and submitting a quality scientific paper. The course contents cover the principle and proper methods of scientific research, the category and the format of various report types, the logic, the framework, the ethics and the components that one should consider before writing a scientific paper. Students will also learn how to prepare effective tables and figures, how to collect and evaluate references, how to cite references, how to choose a journal suitable for submitting, and how to collaborate with the editor for smooth publication process i.e., author's instruction, on-line or hardcopy submitting, peer review, reject, revision, or accept and proof for correction.

119026 高等作物育種學 2 選 謝清祥、下

本課程以講授及討論不同主題之作物育種理論及育種技術，內容包括以下章節：1、育種之演變。2、族群與變異。3、基本自交及異交作物育種方法。4、試驗設計及種源表現測試方式。5、配對設計及其分析。6、全互交設計及其分析。7、遺傳率之估算及其應用。

119026 Advanced Crop Breeding 2 S C.H. Hsieh, S

This course includes the following topics: 1. Evolution of plant breeding. 2. Population structure and variability. 3. Fundamental self-pollinated and cross-pollinated crop breeding methods. 4. Experimental designs and test of germplasm performance. 5. Mating designs and their analysis. 6. Diallele crosses design and analysis. 7. Heritability estimation.

119027 植物細胞生物學 2 選 傅炳山、下
植物細胞膜具調節細胞與外界營養物質及離子流動機制。膜系構造影響膜活性及細胞生理現象。膜脂及膜蛋白質為維持膜系構造重要的成分。不同植物膜系成分的變化會影響植物對環境適應性、生長與老化及生理病害等。由環境對膜內微細構造變動，了解對植物生育之影響。

119027 Plant Cell Biology 2 S B. S. Fuh, S
The cell is separated from its surrounding environment by a thin membrane found interior to the cell wall in plant. The structure of membranes could influence the activity of the cell physiological changes. Membrane lipids and proteins were the most important components to maintain the flow in the membranes. The changes in plant membrane might effect the adaptation of plant to unstable environment and the senescence. To know small movement in internal membrane could calculate the reflection of plant phenomenon.

119028 作物抗病育種 2 選 、上
本課程的目的在使學生瞭解抗病育種在作物病害防治上所扮演的角色。本課程討論抗病之本質化以及如何利用抗病育種原理來達到作物病害防治的目的。內容包括：1.作物抗病之類型。2.寄主與病原菌之共同演化。3.抗病育種在病害防治上的限制。4.抗病育種技術等主題。

119028 Crop Breeding Against Crop Diseases 2 S ,F
The purpose of this course is to inquire into the role of resistance in plant disease. It discusses the nature of resistance and how it can best be use to protect crops from disease. The contents of this course are : 1.Types of disease resistance in plants. 2.Coevolution of plants and pathogens. 3.The limits of disease control by plant breeding. 4.Breeding methods for disease resistance.

119029 蟎蟬學特論 2 選 、上
本課程主要介紹蟎蟬之分類法及生物學特性與生態研究。課程重點為討論農業蟎蟬之重要特性。

119029 Special Topics on Acarology 2 S ,F
This course is to introduce the taxonomy, biology and ecology of mites and ticks. Emphasize will be placed on the species of agricultural importance.

119030 植物流行病學 2 選 梁文進、上
本課程討論植物流行病學之主因子，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。

119030 Plant Disease Epidemiology 2 S W. J. Liang, F
The contents of this course are: plant disease elements (host, pathogen and environment factors) affecting the 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 which are integrated with expert systems of plant pathology.

119031 熱帶作物蟲害特論 2 選 、上
提供區別及認識其重要的個別的特性、害蟲特性，台灣及熱帶地區危害狀況及分佈，主要

防治方法及生物防治法。

119031 Special Topics on Tropical Crop Insect 2 S , F

Provides for identifying and learning essential elements of the biology and distribution of the most important pests of the tropics. Principles and methods of pest control. Biological control of insect pests in Taiwan and the world.

119032 數值分類學 2 選 張萃嫻、上

本課程主要介紹數值分類學的發展歷史、基本原理和分類運算分析方法；課程內容包括數值分類學的理論、表型分類學派學者的主張、表型學派對分類學發展的貢獻、數值分類理論的盲點、表型分類分析方法的缺失、數值分類學之應用及其相應各種數學方法和電腦技術之介紹、數值分類學的展望及各家分類學派相互間論點之比較等。

119032 Numerical Taxonomy 2 S T. Y. Chang, F

The objective of this course is to introduce the history, principles and analysis methods of numerical taxonomy. The contents of this course are to introduce the theories of numerical phenetics, claims made by pheneticists, achievements of the phenetic approach, weaknesses of numerical phenetics, weak points of phenetic methods, application of mathematical methods and computer techniques about numerical taxonomy, future outlook of numerical phenetics and comparisons with other classification schools.

119033 真菌分子遺傳學特論 3 選 梁文進、上

本課程將探討真菌細胞核和粒線體內基因組的結構基因的表現及遺傳，質體基因在真菌種間或種內之轉移之機制及表現。

119033 Special Topics on Fungal Molecular Genetics 3 S W. J. Liang, F

This course will discuss fungal genome structure, its gene expression and inheritance. Nuclear and mitochondrial genomes will be included. The gene expression of fungal plasmids and its transfer between interspecies on inter-races will be also discussed.

119034 血清學特論 3 選 陳滄海、上

本課程主要介紹血清學之理論與應用實務。內容涵蓋免疫學之原理，抗原之製備、免疫技術、多源抗體-單源抗體及重組抗體之製備與純化及分析、各種血清學反應與應用。

119034 Special Topics on Serology 3 S T. H. Chen, F

The course offers a complete understanding of the principle and application of serological techniques. The contents cover principle of immune system, preparing immunogens, immunization, preparation, purification and characterization of polyclonal, monoclonal and recombinant antibodies, and serological methods.

119035 迴歸分析 2 選 謝清祥、上

課程內容介紹簡單迴歸方程式建立及其各因子之檢定，進而討論直線複迴歸之建立、各因子之檢定及機差因子之類別與分析。另，複迴歸方程式之確認方法如前置選擇、後置選擇、逐步迴歸等之利弊與使用方式也詳加介紹。非線性迴歸方程式之建立及各因子檢定亦於課程中詳細討論。

119035 Regression Analysis 2 S C. H. Hsieh, F

The course will start with the introduction to the establishment of simple linear regression formular and test of the parameters associated with the regression. Establishment of linear multiple regression、test of the paramenters associated with the regression、analysis of error term patterns will also be discussed. Identification methods of multiple regression formular such as forward selection、backward selection and stepwise regression etc. will be introduced. Topics on non-linear regression analysis and the parameter analysis will also be included in the course.

- 119036 高等植物營養學特論 2 選 柯立祥、王鐘和、上
 本課程的內容深入介紹植物的營養生理與植物生長的關係。將講述植物營養元素的種類、功能；植物對營養元素的吸收、運轉、再分佈、代謝等的機制；以及影響營養元素吸收的理論及機制；土壤、植物根系環境與營養元素之關係等。
- 119036 Topics on Advanced of Plant Nutrition 2 S L. S. Ke, C. H. Wang, F
 This course introduces the relationship between nutritional physiology and plant growth and development, classification and function of mineral nutrients, the uptake, translocation, redistribution and metabolism of different nutrients, and the factors affecting mineral nutrients absorption, the soil-Root interface in relation to mineral nutrition.
- 119037 作物根系生理 2 選 蔡秀隆、上
 本課程主要探討有關植物根系生理，其內容包括：根系結構與發育，生長與代謝，水分吸收與轉運，離子吸收與轉運，不良環境下的生長。
- 119037 Physiology of the Crop Root System 2 S S. L. Tsai, F
 The objective of this course is to discuss plant root system, including the following topics: Root structure and development, growth and metabolism, uptake and transport of water, Ion uptake and transport, growth under unfavourable condition.
- 119038 農藥毒理學特論 2 選 辛竹英、下
 介紹農藥的化學性質、作用機制、生物活性及農藥在病蟲害防治工作的應用，將強調新類型的生物藥劑及藥劑的選擇性，並討論農藥對人類健康與對環境的影響。
- 119038 Special Topics on Pesticides and Toxicology 2 S C. Y. Hsin, S
 Introduce pesticide chemistry、biochemical modes of action、biological activity and theory of pesticide application of management programs. Emphasis is placed on novel biological insecticides and insecticides with selective properties. The effect of pesticides on human health and environment will be discussed.
- 119039 雜草特論 2 選 鄭秋雄、下
 課程包括雜草與作物間的相互關係，種子和植物體的繁殖法，及雜草與作物的競爭，他毒作用及生他因子在草害管理上的角色。
- 119039 Special Topics on Weed Science 2 S C. C. Cheng, S
 The course include : Ecological concepts for weed-crop relationships, reproduction from seed and vegetative plants, competitiveness of weeds, allelopathy in weed management, biotic agents in weed management.
- 119040 昆蟲媒病學特論 1 選 陳滄海、下
 本課程在介紹植物病害之發生及傳播與昆蟲等媒介生物間之相關性，以及如何對植物病害與媒介生物作綜合管理。主要內容包括蚜蟲、浮塵子、飛蟲、粉介殼蟲、粉蝨、木蝨、甲蟲、薊馬、潛蠅、及蠕類等媒介生物之媒介特性，傳播之病害種類，特徵及生態，最後將論及植物病害與媒介生物的防除或綜合管理。
- 119040 Special Topics on Insect Vector and Plant Diseases 1 S T. H. Chen, S
 The course gives the students with a comprehensive understanding of vector-pathogen-plant interactions and measures for preventing or lessening the threat of vector-borne disease. The contents cover the characteristics of transmission by aphids, leafhoppers, planthoppers, mealybugs, whiteflies, psyllids, membracids, beetles, thrips, flies, characteristics and ecology of vector-borne plant diseases. Finally, major up-to-date integrated pest management is also included.
- 119041 高等生物防治學 2 選 、下

本課程介紹植物病蟲害生物防治之基本概念，生態學上之理論及利用。課程內容包括生物防治之發展史、生態基礎、國外天敵之探尋、天敵群落之建立，回收及評估，以及生物防治與化學防治及微生物防治之綜合利用。除此之外，還包括主要生物防治之計畫其成功、失敗及展望。

119041 Advanced Biological Control 2 S , S

The course is to introduce the fundamental concepts, ecological theories and practices of biological control of plants pathogens, insects pests and weeds. The contents of this course introduce such subjects as biological control 's history; ecological bases; foreign exploration for beneficial organisms; methods of colonization, recovery and evaluation; and integration with chemical control and microbial control. Also introduce is critical study of major biological control projects; their success, trend, and failure.

119042 植物逆境生理學特論 2 選 蔡秀隆、下

進階探討植物遭受逆境時，生理的變化以及其對於植物生長與發育的影響。逆境包括水分、溫度、鹽害、重金屬、光照、空氣污染、生物競爭等逆境如何透過生理、生化代謝作用而影響到植物的生長與發育，以及植物如何克服這些逆境。

119042 Special Topics on Plants Stress Physiology 2 S S. L. Tsai, S

The objective of this course is to discuss the effects of stress on growth, physiology and development of plants. This course includes water stress, waterlogging, temperature, salt stress, metal toxicity, irradiation stress, air pollution, biotic stress etc., and their effects in metabolism and growth of plants, and how to affect the productivity, and adjustment of plants to these stresses are also discussed.

119043 取樣理論與方法 2 選 謝清祥、下

本課程內容將先介紹樣本與母族群間之關係，採樣問卷調查之方式、問卷之設計方法與建立。另，各類取樣方法如：簡單隨機取樣、階層取樣、複階層取樣、聚集取樣及複合式取樣方式介紹均將詳細討論。各取樣分析方法之各項統計介量計算與分析方法亦於課程中介紹。最後課程中亦會討論野外族群調查方法，取樣方式及其介量分析。

119043 Sampling Theories and Technigues 2 S C. H. Hsieh, S

The course will introduce the relationship between sample and population, questionair establishment, design, perform, and analysis methods. Sampling methods such as simple sampling. stratify sampling、multiple stratify sampling、cluster sampling and combined sampling will be discussed in the course. The statistical calculations of the parameters associated with above sampling methods will also be introduced. The sampling method for outdoor population, their parameter analysis will also be included in the course.

119044 高等土壤學特論 2 選 王鐘和、下

本課程的內容深入介紹土壤與生態及植物生長的關係。將課程內容包含土壤的物理、化學及生物性質及生態功能。土壤與植物生長及作物生產的關係及土壤品質管理及增進的策略。

119044 Topics on Advanced Soil Science 2 S C. H. Wang, S

This course further introduces the relationship between soil with ecosystem and plant growth. The contents of this course include soil properties (physics, chemistry and biology) , and it's function of ecosystem .The relationship of soil with plant growth and crop production, and the management and improvement strategy of soil quality.

119045 菌根學特論 2 選 王均琍、下

本課程內容包含菌根之形態、解剖、構造與生理，菌根菌對植物生長之效益，菌根菌之分離、培養與接種源生產與施用技術。

119045 Special Topics on Mycorrhizae 2 S C.L. Wang, S

This course introduces the morphology, anatomy, structure and physiology of mycorrhizae; the efficacy of mycorrhizal fungi on the growth of plants; the isolation and culture method, the technique on the production and application of mycorrhizal inocula.

119046 植物組織構造與機能特論 2 選 王均琍、下

本課程旨在增強研究生對植物組織極其相應機能之瞭解，擬講授植物之各種組織，如分生、輸導，分泌及保護組織等之生長、發育及分化過程；闡明各組織所具有之構造及生理機能。

119046 Special Topics on the Structure and Function of Plant Tissues 2 S C. L. Wang, S

This course is designed to acquaint the students with knowledge of plant structures and functions in the meristematic, conductive, secretory and protective tissues. The processes of the growth, development and differentiation in different tissues will also be elaborated to better equip the students with more profound understanding in the said field.

土木工程系 博士班

(一)教育目標

- (一)配合國家經建發展政策，以培訓先進坡地防災與水資源工程科技人才。
- (二)配合區域性科學園區之規劃發展，以提昇產業之升級。
- (三)提供高級科技人才進修管道，以建立完整技職教育體系。
- (四)整合校院內外既有教學資源，發展整合性坡地防災與水資源工程科技。
- (五)增進產學合作，以落實技職教育理論與實務結合之目標。

(二)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		備 註
		上	下	上	下	上	下	
專題討論 Seminar	4	1	1	1	1	0	0	
博士論文 Dissertation	12			6	6			
合 計	16	1	1	7	7			

(三) 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	
坡地災害監測技術 Technology of Hillslope Disaster Monitoring System	3	3				
坡地水文特性分析 Analysis of Hydrologic Characteristics on Hillslope	3	3				
序率水文學 Stochastic Hydrology	3	3				
生態工程 Ecological Engineering	3	3				
高等工程數學 Advanced Engineering Mathematics	3	3				
高等結構力學 Advanced Structural Mechanics	3	3				
高等鋼筋混凝土設計 Reinforced Concrete Design Advanced	3	3				
混凝土材料行為 Behavior of Concrete Materials	3	3				
高等岩石力學 Advanced Rock Mechanics	3	3				
高等土壤力學 Advanced Soil Mechanics	3	3				
應用地工數值分析 Apply Geotechnical Numerical Analysis	3	3				
免開挖技術 Trenchless Technology	3	3				
水文地質 Hydrogeology	3	3				
地下水力學 Groundwater Hydraulics	3	3				
高等渠道水力學 Advanced Open-Channel Hydraulics	3	3				
水文模式 Hydrologic Modeling	3	3				
洪旱災害學 Introduction to Flood and Drought Disaster	3	3				
統計水文學 Statistic Hydrology	3	3				

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
營建自動化 Automation and Robotics in Construction	3	3				
地工合成材料防災工程之應用 The application of geosynthetics for disaster prevention Engineering	3	3				
瀝青混凝土 Asphalt Concrete	3	3				
高等防砂工程 Advanced SABO Engineering	3		3			
特殊地植生 Vegetation Engineering of Special Disturbed Land	3		3			
高等水資源管理 Water resource management	3		3			
有限元素法 Finite Element Method	3		3			
模糊與類神經網路 Fuzzy and Neural Network	3		3			
電腦輔助結構設計 Computer Aids Structural Design	3		3			
結構最佳化設計 Optimal Structural Design	3		3			
固體力學 Solid Mechanics	3		3			
地震災害學 Introduction of Seismic Disaster	3		3			
坡地開發與規劃 Hillside Development and Planning	3		3			
大地現地試驗 Soil In-Situ Test	3		3			
高等工程地質 Advanced Engineering Geology	3		3			
坡地災害學 Sediment Related Disaster on Hillslope	3		3			
高等基礎工程 Advanced Foundation Engineering	3		3			
土壤動力學 Soil Dynamics	3		3			
水資源系統分析 Water Resources System Planning and Analysis	3		3			

中 文 科 目 名 稱 英	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
地下水補注 Groundwater Recharge	3		3			
地下水管理 Groundwater Management	3		3			
地下水模式分析 Groundwater Modeling Analysis	3		3			
計算流體力學 Computational Fluid Dynamics	3		3			
灌溉管理 Irrigation Management	3		3			
鋪面設計 Pavement Design	3		3			
精實營建系統 Lean Construction Systems	3		3			
營建生產力分析 Construction Productivity Analysis	3		3			
結構可靠度分析 Structural Reliability Analysis	3		3			
崩塌地治理 Landslide Control	3			3		
坡地微氣候學 Hillslope Microclimateology	3			3		
土壤沖蝕 Advanced Soil Erosion	3			3		
河川型態學 River Morphology	3			3		
風險評估與管理 Risk Assessment and Management	3			3		
灌溉排水工程 Irrigation and Drainage Engineering	3			3		
塑性力學 Theory of Plasticity	3			3		
災害管理學 Disaster Management	3			3		
災害應變 Disaster Response	3			3		
工程品質與管理 Engineering Quality and Management	3			3		
土壤行為 Soil Behavior	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	
大地工程施工學 Geotechnical Engineering Construction	3			3		
區域水資源規劃 Regional Water Resources Planning	3			3		
集水區經營管理 Water Shed Management	3			3		
輸砂力學 Sediment Transport	3			3		
環境流體力學 Environmental Fluid Mechanics	3			3		
複合材料力學 Mechanics of composite materials	3			3		
坡地工程 Hillslope Engineering	3				3	
坡地氣候調查與分析 Investigation and Analysis for Hillslope Climatic Resources	3				3	
災害防救法規 Disaster Prevention and Mitigation Legislation	3				3	
結構穩定 Theory of Structural Stability	3				3	
合 計	201	63	75	51	12	

		第 三 學 年								學分總計
學 期	第 一 學 期		第 二 學 期				第 二 學 期			
修 別	科 目	學 分	科 目	學 分	科 目	學 分	科 目	學 分		
必 修	專題討論	0	專題討論	0						
小 計		0		0					16	
選 修										
小 計									201	

註：1.本所學生至少應修滿40學分始得畢業(其中必修應修 16學分，選修應修 24 學分，博三以上必選修專題討論)

2.除@課程為博士班單獨授課之外其餘課程與碩士班合開。

土木工程系博士班

Department of Civil Engineering

課程代號 Course Number	科目名稱(中文) Course (Chinese)	學分 Credits	科目名稱(英文) Course (English)	頁次 Page
專業必修科目 Required Courses				
339001	專題討論	4	Seminar	
339002	博士論文	12	Dissertation	
專業選修科目 Elective Courses				
339003	坡地災害監測技術	3	Technology of Hillslope Disaster Monitoring System	
339004	坡地水文特性分析	3	Analysis of Hydrologic Characteristics on Hillslope	
339005	序率水文學	3	Stochastic Hydrology	
339006	生態工程	3	Ecological Engineering	
339007	高等工程數學	3	Advanced Engineering Mathematics	
339008	高等結構力學	3	Advanced Structural Mechanics	
339009	高等鋼筋混凝土設計	3	Reinforced Concrete Design Advanced	
339010	混凝土材料行為	3	Behavior of Concrete Materials	
339011	高等岩石力學	3	Advanced Rock Mechanics	
339012	高等土壤力學	3	Advanced Soil Mechanics	
339013	應用地工數值分析	3	Apply Geotechnical Numerical Analysis	
339014	免開挖技術	3	Trenchless Technology	
339015	水文地質	3	Hydrogeology	
339016	地下水力學	3	Groundwater Hydraulics	
339017	高等渠道水力學	3	Advanced Open-Channel Hydraulics	
339018	水文模式	3	Hydrologic Modeling	
339019	洪旱災害學	3	Introduction to Flood and Drought Disaster	
339020	統計水文學	3	Statistic Hydrology	
339021	營建自動化	3	Automation and Robotics in Construction	
339022	地工合成材料防災工程之應用	3	The application of geosynthetics for Disaster prevention Engineering	
339023	瀝青混凝土	3	Asphalt Concrete	
339024	高等防砂工程	3	Advanced SABO Engineering	
339025	特殊地植生	3	Vegetation Engineering of Special Disturbed Land	
339026	高等水資源管理	3	Water resource management	
339027	有限元素法	3	Finite Element Method	
339028	模糊與類神經網路	3	Fuzzy and Neural Network	
339029	電腦輔助結構設計	3	Computer Aids Structural Design	
339030	結構最佳化設計	3	Optimal Structural Design	

339031	固體力學	3	Solid Mechanics
339032	地震災害學	3	Introduction of Seismic Disaster
339033	坡地開發與規劃	3	Hillside Development and Planning
339034	大地現地試驗	3	Soil In-Situ Test
339035	高等工程地質	3	Advanced Engineering Geology
339036	坡地災害學	3	Sediment Related Disaster on Hillslope
339037	高等基礎工程	3	Advanced Foundation Engineering
339038	土壤動力學	3	Soil Dynamics
339039	水資源系統分析	3	Water Resources System Planning and Analysis
339040	地下水補注	3	Groundwater Recharge
339041	地下水管理	3	Groundwater Management
339042	地下水模式分析	3	Groundwater Modeling Analysis
339043	計算流體力學	3	Computational Fluid Dynamics
339044	灌溉管理	3	Irrigation Management
339045	鋪面設計	3	Pavement Design
339046	精實營建管理	3	Lean Construction Systems
339047	營建生產力分析	3	Construction Productivity Analysis
339048	結構可靠度分析	3	Structural Reliability Analysis
339049	崩塌地治理	3	Landslide Control
339050	坡地微氣候學	3	Hillslope Microclimateology
339051	土壤沖蝕	3	Advanced Soil Erosion
339052	河川型態學	3	River Morphology
339053	風險評估與管理	3	Risk Assessment and Management
339054	灌溉排水工程	3	Irrigation and Drainage Engineering
339055	塑性力學	3	Theory of Plasticity
339056	災害管理學	3	Disaster Management
339057	災害應變	3	Disaster Response
339058	工程品質與管理	3	Engineering Quality and Management
339059	土壤行為	3	Soil Behavior
339060	大地工程施工學	3	Geotechnical Engineering Construction
339061	區域水資源規劃	3	Regional Water Resources Planning
339062	集水區經營管理	3	Water Shed Management
339063	輸砂力學	3	Sediment Transport
339064	環境流體力學	3	Environmental Fluid Mechanics
339065	複合材料力學	3	Mechanics of composite materials
339066	坡地工程	3	Hillslope Engineering
339067	坡地氣候調查與分析	3	Investigation and Analysis for Hillslope Climatic Resources
339068	災害防救法規	3	Disaster Prevention and Mitigation Legislation
339069	結構穩定	3	Theory of Structural Stability

土木工程系博士班

Department of Civivil Engineering

一、必修科目 Required Courses

339001 專題討論 4 必 輪授

本課程安排一系列專題演講，訓練學生熟習學術研討會的情況，此為四學期課程，邀請校內教師與校外學者專家演講，或請研究生發表研究成果，後二學期，每一學生必須針對其有關碩士論文主題做口頭報告。

339001 Seminar 4 R All Faculties

A sequence of lectures is arranged in the course to train the students to be familiar with the situation of a academic symposium or a conference. Basically, it is a four semesters course. Some lectures are given by the teachers in the school or by the experts invited from outside the school in the course. The lecture may also be given by the graduate students who have certain solid conclusions drawn their research. In the last two semesters, each student is required to present on the topic involving his master thesis.

339002 博士論文 12 必 指導教授

本課程分兩學期，主要訓練學生針對一主題進行深入研究，包括資料收集與分析、題目之研擬，以熟習學術研究之過程及博士學位取得之依據，每一學生必須針對其有關博士論文主題做論文口試。

339002 Dissertation 12 R Adviser

This course is a two semesters course. Some lectures are given by the teachers in the school or by the experts invited from outside the school in the course. The lecture may also be given by the graduate students who have certain solid conclusions drawn their research. In the last two semesters, each student is required to present on the topic involving his doctoral dissertation.

二、選修科目 Elective Courses

339003 坡地災害監測技術 3 選 許中立 上

本課程主要在介紹坡地安全監測方法與其對應之災害防治基本觀念，藉由國內外目前發展概況加以說明。主要內容包括：監測之目的介紹、監測方法與種類、監測技術、監測規劃、現地量測、監測分析及監測結果之應用等。

339003 Technology of Hillslope Disaster Monitoring System 3 S C.L.Hsu F

The objective of this course is to assist the students understanding the basic concepts relationship between slope stability Monitoring methods planning and disaster prevention methods, and their technology development recently. The contents include: introduction of monitoring target, monitoring method and variety, monitoring technology, monitoring management, monitoring on the spot, monitoring analysis, and monitoring application, etc..

339004 坡地水文特性分析 3 選 李錦育 上

本課程之主要目的在於介紹坡地環境所具有之水土資源，包括基本特性以及開發保育之對應原則與方式。

339004 Analysis of Hydrologic Characteristics on 3 Hillslope S C.Y.Lee F

This main purpose of this course is introduced the water and soil resources that the environment of the hillslopes, including the basic characteristic and the corresponding principle and way of developing.

339005 序率水文學 3 選 葉一隆 上

本課程內容包括單變量時間序列分析，多變量時間序列分析，動態過程之頻率預分析，連續長時序模式，多維度動態過程，靜態線性系統推估，動態水文系統推估，及動態濾波觀念介紹。

339005 Stochastic Hydrology 3 S Y.L.Yeh F

This course contains the following subjects: Generalized univariate time-series analysis, Multivariate time-series analysis, Frequency-domain analysis of dynamic processes, Long-term persistence in modeling, Multidimensional dynamic processes, Estimation of static linear systems, Estimation of dynamic hydrologic systems, Additional dynamic filtering concepts.

339006 生態工程 3 選 謝杉舟 上

本課程主要引導學生閱讀生態工程相關文獻，並使學生瞭解生態工程相關議題之研究近況與使用之方法，以增加學生對此議題之研究能量。

339006 Special Topics on Ecological Engineering 3 S C.T.Shan F

The major purpose of this course is to guide students to review the ecological engineering topics and to enhance the research ability and methodology in this field.

339007 高等工程數學 3 選 鍾文貴 上

本課程主要內容包含下列各章及要節：位勢理論之複變分析：熱流問題、流體動力問題、波以松積分公式、諧合函數之性質；保形映射：定義、線性分式變換、特殊線性變換、其它函數之映射黎曲面；數值法概論：緒論，以疊代法求方程式之解，內插、雲線、數線微分與積分；用在線性代數之數值法：高斯消去法、LU 因子分解、疊代解法、最小平方法。

339007 Advanced Engineering Mathematics 3 S W.G.Chung F

The main contents of this course include the following chapters and important sections : Complex analysis applied to potential theory : heat problem, fluid flow, Poisson's integral formula, general properties of harmonic functions ; Conforming mapping : definitions, liner fractional transformations, special linear fractional transformations, mapping of other functions, Riemann surfaces ; Numerical methods in general : introduction, solution of equations by iteration, interpolation, spline, numerical differentiation and integration ; Numerical methods in linear algebra : Gauss elimination, LU-factorization, solution by iteration, method of least square.

339008 高等結構力學 3 選 吳志興 上

了解矩陣結構分析之基本原理，配合數值分析與電腦程式之習作以便熟悉實際之解題步驟，介紹結構之穩定性分析。課程大綱：勁度法與柔度法之矩陣結構分析，以能量原理推導分析方程式，桁架與構架之程式分析方法，結構穩定性問題之推導與解題。

339008 Advanced Structural Analysis 3 S C.H.Wu

Principles and philosophies of structural design, concepts and theories load and resistance factor design, Types and materials for steel structures, Tension member, Compression members, beams, beam-columns, connections.

339009 高等鋼筋混凝土設計 3 選 盧俊愷 上

本課程主要強調鋼筋混凝土組成之構件行為，課程內容包括：設計原理，材料之性質，撓曲構材之行為，壓縮構材之行為，桿件承受剪力與扭矩之行為，撓度計算與控制，握裹與錨定，裂縫與裂縫之控制。

339009 Reinforced Concrete Design Advanced 3 S J.K.Lu F

Design criteria, Properties of material, behavior of flexural members, behavior of compressive members, behavior of members under shear and torsion, deflection calculation and control, Crack and crack control.

339010 混凝土材料行為 3 選 盧俊愷 上

混凝土硬化後之巨微觀結構、性質及行為，目的在培養學生由材料微觀結構推斷巨觀性質之能力，以建立對混凝土材料科學研究之信心。課程大綱：硬化混凝土性質與行為：破裂及破壞（水泥－骨材結合力、破壞力學、疲勞）、變形（彈性反應、潛變、乾縮）、耐久性（惡化機理），熱學性質（耐火機理）；特殊混凝土：輕質混凝土、聚合物混凝土、高強度混凝土、巨積混凝土、高流動混凝土、滾壓混凝土、纖維加強混凝土。

339010 Behavior of Concrete Materials 3 S J.K.Lu F

Studies of actual member behavior; members in flexure, combined flexure, shear, and torsion; bond and anchorage; combined axial load and flexure; slender columns; deep beams; derivation of current code provisions.

339011 高等岩石力學 3 選 鍾文貴 上

針對岩石之形成、種類、基本特性，受力行為變化，風化後之強度變化及其力學特性試驗分析作介紹，使學生能瞭解岩石之重要特性與類別，並深知其與工程結構設計（尤其基礎工程）之密切關係，其主要的內容計有：岩石之生成、分類與特性、岩石之基本力學特性與行為、岩石力學特性之基本試驗、岩石破壞行為分析、岩坡之穩定性、岩石之爆破、岩石之力學特性與基礎工程、岩石特性與隧道工程、岩石特性與港灣工程、岩石特性與坡地開發、岩坡穩定性與道路工程、岩石特性與水庫工程。

339011 Advanced Rock Mechanics 3 S W.G.Chung F

Introducing the formation, classification, property, stress-strain behavior, and weathering of rocks to student, the lectures have formation, classification, and properties and tests of rocks, yielding behavior and analysis, rock slope stability, exploding of rocks, rock mechanics and foundation engineering, rocks and tunnelling, rocks and harbors, rocks and slopeland development, stability of rock slope and road construction, rock and dams.

339012 高等土壤力學 3 選 謝啟萬 上

土壤團粒特性，黏土礦物組成，土壤夯實，飽和土及未飽和土之有效應力分析，土壤滲透性與滲流理論，二維及三維度土壤內之應力與荷載重關係，非排水荷重之土壤孔隙水壓力分析，土壤壓密與應力應變之關係，土壤沉陷量推估分析，應力路徑模式與沉陷量估算，非黏性土壤之應力強度分析，黏性土壤之應力強度分析，土壤潛變分析，非等向性土壤之抗剪強度，非均質土壤之抗剪強度，結論。

339012 Advanced Soil Mechanics 3 S C.W.Hsieh F

The course will detail focus on the structures, basic mechanic characters, and the behavior of soil. To make the students understand the basic characteristics of soil mechanics in civil engineering, the course contains : formation and structure of soil, basic mechanic properties of soil, soil classifications, constituent of clay minerals, seepage flow in soil, compaction of soil, shear strength and yielding theory of soil, and lateral earth pressure and its balance.

339013 應用地工數值分析

3 選 謝啟萬 上

本課程將介紹振動學及波動學理論及其應用於土壤及基礎於地震時受震動情況下行為之探討與分析，課程之內容包括：振動學理論介紹，振動系統介紹及分析，波動學理論，土壤之動態行為，土壤液化及其於地震荷重下之行為，土壤動態土壓力理論及分析，基礎動態行為及分析。

339013 Apply Geotechnical Numerical Analysis 3 S C.W.Hsieh F

Introduction to Numerical Methods; Basic Concepts in Elasticity; Constitutive Laws for Geologic Media; Principle of Finite Element Method; Beams, Slabs, and Pavements; Wave Equation Analysis of Piling Behavior. Laterally Loaded Piles; One Dimensional Consolidation; Flow Through Porous Media; Numerical and Physical Modeling; Stability Analysis by Plasticity Theory;

339014 免開挖技術

3 選 謝啟萬 上

由於採用明挖回填工法進行管線修繕與佈設，施工時，常常造成巨額社會成本，為降低管線施工對社會之衝擊，免開挖工法因應而起，目前世界上免開挖技術有上百種，依其用途其大致可分為管線檢視、管線修補與翻修、線上置換與管線更新等四大類，本課將依其施工方式分別介紹如下施工技術：管線檢視、內套管工法、緊貼內襯工法、噴漿內襯工法、現場固化工法、局部修補與填縫工法、大口徑管道與井室之翻修、衝擊鑽掘與衝擊套管工法、導引及導向鑽掘工法、與推進及小管推進工法。

339014 Trenchless Technology 3 S C.W.Hsieh F

Trenchless Technology is the science of installing, repairing or renewing underground pipes, ducts and cables using techniques that minimize or eliminate the need for excavation. Trenchless techniques can reduce environmental damage and social costs, and at the same time provide an economic alternative to open-trench methods of installation, renewal and repair. Currently more than one hundred techniques have been developed and can be divided into four major categories, such as surveys and investigations, repair and renovation, on-line replacement, and new installation. This course will cover the following techniques: Surveying and Investigations, Slipling, Close-fit Lining, Spray Lining, Cured-in-place Lining, Localized Repair & Sealing, Renovation of Large Diameter Pipes & Chambers, On-line Replacement, Impact Molding & Ramming, Guided Boring & Directional Drilling, and Pipejacking & Microtunnelling.

339015 水文地質

3 選 鄒禕 上

水文地質是研究地下水的科學，它研究地下水周圍環境（岩石圈、大氣圈、水文圈及人類活動）影響下，數量和質量在時間上之變化規律；並在此基礎上研究如何應用這一規律有效地利用地下水和調節控制地下水以興利避害。

339015 Hydrogeology 3 S I.Tsou F

Hydrogeology comprises the interrelationships of geologic materials and processes with water. (A similar term, geohydrology, is sometimes used as a synonym for hydrogeology, although it more properly describes an engineering field dealing with subsurface fluid hydrology.) The physiography, surficial geology, and topography of a drainage basin, together with the vegetation, influence the relationship between precipitation over the basin and water draining from it. The creation and distribution of precipitation is heavily influenced by the presence of mountain ranges and other topographic features. Running water and ground water are geologic agents that help heavily dependent upon geology. Hydrogeology is both a descriptive and analytic science. The development and management of water resources are important parts of hydrogeology well.

339016 地下水力學 **3 選 丁澈士** **上**

本課程主要介紹水在孔隙介質流動與污染質傳輸之原理，課程內容包括：地下水流動型態、拘限含水層之地下水流分析、非拘限含水層之地下水流分析、非飽和層之水流分析、污染質傳輸分析。

339016 Groundwater Hydraulics **3 S C.S.Ting** **F**

The course presents the basic principles of water flow and pollutant transport in porous media. The main contents of this course include : groundwater flow types, the governing equations of groundwater in confined aquifer, the governing equations of groundwater in unconfined aquifer, groundwater flow through unsaturated soil, and pollutant transport analysis.

339017 高等渠道水力學 **3 選 葉一隆** **上**

水可依管路系統或渠道系統輸送。本課程主要依講述水在渠道中流動時之各種渠流類型及其水理以作為渠道輸水系統水理設計之基礎。內容包括：渠道分類及性質，能量與動量原理及其應用，臨界渠流之計算與應用，等速渠流，定量續變速渠流等。

339017 Advanced Open-Channel Hydraulics **3 S Y.L.Yeh** **F**

This course contents the following subjects : Basic concepts of open channel flow; The energy principle in open channel flow; The momentum principle in open channel flow; Flow resistance; Channel controls; Channel transitions; Unsteady flow; The dam-break problems.

339018 水文模式 **3 選 鄒禕** **上**

本課程主要介紹應用數值或統計法來建立模式以分析水文事件，課程內容包括：水文系統與模式分類，合成水文學，機率分佈與隨機變數，馬可夫鏈模式、高斯噪音模式，水文模擬，主要水文模式介紹，模式校驗。

339018 Hydrologic Modeling **3 S I.Tsou** **F**

The objective of the course is prepared for the students in learning how to analyze the hydrologic system and buildup a proper model for forecasting and design. The major contents in the course include concept of hydrologic system and model, synthetic hydrology, probability distribution function, hydrologic simulation model, model calibration, and application of hydrologic model.

339019 洪旱災害學 **3 選 林金炳** **上**

本課程介紹洪災與旱災發生原因與預防之道，課程內容包括水文循環，氣候變遷，洪水災害之整備與預防及早災之整備與預防。

339019 Introduction to Flood and Drought Disaster **3 S J.B.Lin** **F**

The course presents the occurrence reasons and prevention methods of flood and drought disaster. The course includes hydrological cycle, climate change, mitigation and prevention of flood disaster and drought disaster.

339020 統計水文學 **3 選 王裕民 上**

本課程主要介紹統計方法應用於水文資料分析之方法，課程內容包括：機率定律、基本統計概念、機率分佈函數、迴歸與相關分析、信賴區間與假設檢定、資料產生方式、時間序列水文分析、時間序列水文模式介紹。

339020 Statistic Hydrology **3 S Y.M.Wang F**

The objective of the course is prepared for the students interested in learning how to use the statistical models and methods as valuable tool to analyze hydrologic and engineering problems. The major contains in this course include basic concept of probability and statistics, probability distribution function, regression and correlation analysis, confidence intervals and hypothesis testing, analysis of hydrologic time series and stochastic hydrologic models.

339021 營建自動化 **3 選 柯千禾 上**

本課程之目的在讓學生了解營建自動化的涵義，並具備運用自動化技術提升營建生產力之能力，內容包含：經濟有效性分析、規劃自動化、施工自動化、管理自動化、機具自動化、人因工程、機器人製作，最後透過自動化競賽評定成績。

339021 Automation in Construction **3 S C.H. Ko F**

This course introduces the benefits of construction automation. Through the course, students can identify opportunities for improving construction productivity using robots. The contents of the course include: economic effectiveness evaluation, planning automation, construction automation, management automation, equipment automation, human factors, and robot design. The course is finalized by a competition of construction automation.

339022 土工合成材料防災工程之應用 **3 選 謝啟萬 上**

土工合成材料家族包括土工織布、土工格網、土工止水膜、土工格柵、土工合成管、土工發泡材、土工複合材、其它型式土工合成材料等，其應用功能包括分離、加勁、排水、濾水、阻隔、防沖蝕及保護等，本課程將介紹土工合成材料於大地、水利、環境、水土保持、道路、橋樑等工程之應用，以達預防工程災害之發生及於災害發生後有效及快速達成災後整治及維護之工作，並說明土工合成材料工程應用之分析、設計、選材等相關資訊及應用實例之探討。

339022 The application of geosynthetics for disaster prevention Engineering **3 S C.W.Hsieh F**

The family of geosynthetics includes geotextiles, geogrids, geomembranes, geonets, geo-pipes, geofoams, geo-composites, and geo-others. The functions of geosynthetics consist of separation, reinforcement, filtration, drainage, barrier, erosion control, and protection. The course will cover the engineering applications in geotechnical, hydraulic, environmental, soil water conservation, roadway, and bridge engineering in order to prevent and resolve engineering disaster in a fast and effect approach. The analysis, design, selection of geosynthetics for these applications will also be discussed.

339023 瀝青混凝土 **3 選 盧俊愷 上**

本課程包含瀝青膠泥物理性質、化學性質，瀝青材料規範，粒料，瀝青混凝土之工程性質，瀝青混凝土配合設計，瀝青混凝土路面鋪設與維修。

339023 Asphalt Concrete**3 S J.K.Lu F**

The topics of course include the properties of asphalt, aggregate, the properties of asphalt concrete, mix design, maintenance and rehabilitation of HMA.

339024 高等防砂工程**3 選 李錦育 S**

本課程之主要目的在於介紹坡地土石流，包括：緒論、扇狀地之形成與災害、扇狀地土砂流出與堆積之觀測實例、扇狀地上河川之變動、土石流之發生機制、土石流之流動特性、土石流之堆積機制、土石流災害之預測、土石流之防治方法。

339024 Advanced SABO Engineering**3 S C.Y.Lee S**

This main purpose of this course is introduced the debris flow of the hillslopes, including Introduction, the sector area form and disaster, to observe earth spill and collect in sector area, the streams change in sector area, debris flow trigger mechanism, the floating properties of Debris flow, debris flow collect mechanism, to forecast the debris flow disaster and debris flow prevention methods.

339025 特殊地植生**3 選 黃國禎 下**

本課程探討植生施工之對象，經選取適宜生長之植生材料，配合基礎與保護工程之構置及植生導入作業，達到植生設計目的之科學與技術。特殊地植生工法包括植生對策（石灰石礦區、崩塌地等）、景緻林相更新、植生復育與棲地改善等。

**339025 Vegetation Engineering of Special 3 S K.C.Huang S
Disturbed Land**

The objective of this course discusses the target of construction by choosing proper vegetation material in addition to the organization of safeguard engineering and vegetation treatment (limestone area、landslide area etc.) in order to the goal of vegetation designing science and technology. Special topic of vegetation engineering is included the method of vegetation、updating the tree of landscape、habitat improvement.

339026 高等水資源管理**3 選 陳鈞華 下**

介紹台灣傳統水資源開發情勢的惡化。研議提出水資源經營管理的基本策略__妥善而有效率管理制度之制訂及實施以提高水資源使用效率，儘量降低水資源開發使用成本。水資源經營管理朝向整體經營及需求管理的策略方向。研定「多元化水水資源經營管理」的政策積極推動。課程內容：正視水資源的稀少性。水資源的管理制度。使用者競爭下的水資源分配。民間參與水資源管理。法規管制。前瞻性的水資源管理。

339026 Water resource management**3 S J.H.Chen S**

The objective of this course is to demonstrate some of the best and most usable management policy in water resources. The worsen circumstances in water resources developing in Taiwan is to introduced. Some basic strategy as “ how to institute the most effective water management or how to cut down the operation or development cost in water resources “ is to draw up and the feasible multi-water management policy is also to deliberate in the final chapter. These levels are as follows:To look upon the scarcity issues of water resources. The water resources management system. Water resources allocation in competition situation among different users. Civil participation in water management. Laws and regulations in water management. The prospective water management.

339027 有限元素法**3 選 柯亭帆 下**

本課程主要介紹有限元素法之原理與其應用，課程內容包括：虛功原理，變分法之應用，結構元件之有限元素勁度矩陣推導，變位模型，力素模型，混合模型之討論及此法之應用範例。

339027 Finite Element Method 3 S T.F.Kerh S

The course presents the basic principles of finite element methods. The contents of this course include principle of virtual work, principle of variational methods, finite element stiffness matrix of structural members, deflection models, force models, discussion of hybrid models, and applications.

339028 模糊與類神經網路 3 選 柯亭帆 下

本課程介紹模糊理論與類神經理論。模糊理論內容包括模糊集合、模糊關係、模糊數與模糊控制。類神經網路是人工智慧研究的一部份，由於具有學習的能力而日受重視，本課程內容包含類神經網路發展歷史、類神經網路應用與特色、結合性記憶、知覺體、反向傳遞學習及其它網路模型。

339028 Fuzzy and Neural Network 3 S T.F.Kerh S

The course presents the basic principles of fuzzy and neural networks. The fuzzy theory includes fuzzy sets, fuzzy relations, fuzzy numbers and fuzzy control. Neural networks research is a subfield of AI. Since a neural network has the ability to "learn", it becomes more and more important in the field of intelligent (control) system. The content of this course includes history of neural networks, characteristics and applications of neural networks, associative memory, learn by back - propagation, and other neural network models.

339029 電腦輔助結構設計 3 選 蔡孟豪 下

本課程介紹以電腦程式輔助結構分析，本課程將使用 SAP2000 程式。內容包含輸入檔介紹，預處理程式、主程式執行、鋼筋混凝土後處理程式及鋼結構後處理程式及輸出檔解讀。

339029 Computer Aids Structural Design 3 S M.H.Tsai S

The course discusses the analysis of structure by using computer software. The computer program SAP2000 will be introduced in the course. The input file will be introduced first. Then, the pre-processor, the main program and the post-processors for reinforced concrete and for steel. Also, the output file will be discussed.

339030 結構最佳化設計 3 選 吳志興 下

本課程主要介紹結構最佳化設計之原理，課程內容包括：最佳化設計理念，再分析方法，最佳化之判斷條件，線性規劃，非線性規劃，幾何規劃，動態規劃，最佳化結構設計之應用。

339030 Optimal Structural Design 3 S C.H.Wu S

The course presents the basic principles of optimal structural design. The contents of this course include optimal design concept, reanalysis methods, optimal design conditions, linear programming, non-linear programming, geometric programming, dynamic programming, and application of optimal structural design.

339031 固體力學 3 選 鍾文貴 下

廣義張量分析，基本定律，有限變形理論及應力、應變張量，塑性之本構關係，變分原理，小位移變形彈塑性有限元素法，有限變形彈塑性 Lagrangian 有限元素法，有限變形彈塑性 Eulerian 有限元素法，接觸力學，貫穿力學。

339031 Solid Mechanics 3 S W.G.Chung S

Elastic tress-strain relationship, Yield criteria, Flow rule, Constitutive equation of plasticity, Hydrostatic pressure independent material, Pressure dependent material.

339032 地震災害學 **3 選 蔡孟豪** **下**

本課程主旨在於地震災害相關領域的綜合性介紹與主要課題的分析研究方法，藉以培養學生了解地震災害範疇與具備處理地震災害工程問題的能力，訓練學生對地震災害可能引起的衝擊有正確的認識，奠定日後繼續進修或從事地震相關課程或工作的基礎。內容包括地震成因與地震學、危害度分析與地盤反應、地震災害類型、結構地震反應與地震災害防治。

339032 Introduction of Seismic Disaster **3 S M.H.Tsai S**

This course is aimed at introducing several types of earthquake-related disaster and their corresponding state-of-the-art research. The main topics of this course include introduction to wave propagation in solid media, body and surface waves, a review of seismic hazard analysis, causes of earthquakes, a review of the seismicity of the earth, review of structural dynamics and response spectra, types of earthquake disaster, measures of prevention and rehabilitation of seismic disaster.

339033 坡地開發與規劃 **3 選 林金炳** **下**

台灣地區平地僅佔全面積之 1/3 弱，大量之土地開發與利用均已朝向山坡地，不當之開發利用已造成人民生命財產重大損傷，亦使得社會成本急劇增加。本課程旨在針對坡地合理之開發進行分析與規劃方法，由區域性基本資料調查以建立資料庫；再由水理分析方法與力學理論分析予以介紹合理之規劃配置方法，使學生具備坡地開發與規劃之基本知識與實作之初步能力。

339033 Hillside Development and Planning **3 S J.B.Lin S**

This course focuses on the analytical and planning methods on hillside development reasonably. Establish the database from primary surveying and experimentation at planned area is the first step in this course. Meanwhile, methods of layout safe and reasonable constructions by the hydrological and mechanical analysis will be introduced. To make the students possess the basic ability of development and planning in hillside is the major purpose in this course.

339034 大地現地試驗 **3 選 謝啟萬** **下**

本課程主要介紹大地現地試驗方法，課程內容包括：鑽探方法，土壤取樣，標準貫入試驗，圓錐貫入試驗，SPC-CPT 比較，現地十字剪力片試驗，平鈹膨脹儀，壓力儀，其他現地試驗。

339034 Soil In-Situ Test **3 S C.W.Hsieh S**

The contents of this course include the methods of exploration, soil sampling, standard penetration test, cone penetration test, SPT- CPT, pressure-meter, field vane shear test, dilatometer, other in-situ test.

339035 高等工程地質 **3 選 劉英偉** **下**

針對全台灣之特殊地形與地質條件，引用基礎地質學理論，用以說明其與工程結構物之基礎設計分析及防患工程地質災害之形成使學生能深切瞭解地質調查之重要性及地質在工程規劃設計所扮演之角色其內容包括：台灣之地形發育與特色、台灣之地層、地質構造、活動漸層、地層圖製作與研讀、岩石類則與其工程特性、不連續面種類與特性、砂石骨材及其特性、水庫工程地質、坡地社區工程地質、道路工程地質、橋隧工程地質、山崩與邊坡穩定分析、台灣較大規模之山崩個案介紹與分析。

339035 Advanced Engineering Geology **3 S I.W.Liu S**

Based on the geomorphology and geology on Taiwan, the course will help students understand the roles of geological investigations in engineering construction planning and design, and prevent inducing geological disasters. It contains : geomorphology of Taiwan and its characters, geological profile of Taiwan, geological structure, types of rocks and its engineering properties, types and characteristic geology for dams, (10)engineering geology for slopeland developing, (11)engineering geology for road construction, (12)engineering geology for tunnels and bridges, (13)slope instability analysis, (14)practical cases of rockfall and slope failure in Taiwan.

339036 坡地災害學 **3 選 林金炳** **下**

本課程旨在針對台灣典型坡地災害（沖蝕、崩塌、地滑與土石流等）特性之調查分析與防治技術之規劃設計等相關內容作系列性之教導，並使學生能具體應用 GPS/GIS/RS 整合科技從事於坡地災害之調查、判釋、分析與防治處理，終至對災害前趕危險進行評估分析與劃定。

339036 Sediment Related Disaster on Hillslope **3 S J.B.Lin** **S**

The Main purpose of this Course is Concentrated on the field investigation analysis and disaster prevention of sediment related disasters, such as soil erosion, landslides, and debris flow, occurred at slope land in Taiwan, Also, the application of GPS/GIS/RS technology integration is incorporated and organized by the instructor who can teach student to know how to utilized these integrated techniques on the sediment disaster control and hazard mitigation. Finally, all students can realize the risk assessment on the potential disaster zone in this course.

339037 高等基礎工程 **3 選 謝啟萬** **下**

基礎工程鑽探試驗，淺基礎承载力估算與沉陷量推估，斜坡上淺基礎設計，筏式基礎工程承载力估算與不均勻沉陷，筏式基礎工程規劃設計，側向土壓力分析與擋土結構物設計，版樁規劃設計，開挖工程規劃設計，樁基礎設計，沉箱工程規劃設計，崩潰土層之基礎工程設計，膨脹土層之基礎工程設計，垃圾埋藏工程基礎處理，加勁土工結構物，地盤改良，土壤穩定，地下管線基礎工程規劃設計，基礎工程破壞分析探討。

339037 Advanced Foundation Engineering **3 S C.W.Hsieh** **S**

The advanced foundation engineering will go through the planing, investigations signing, and construction of foundations for civil engineering structures. The class covers : foundations and classification of foundations, types of foundations and its settlement, site investigations, boring, and tests, bearing capacity, settlement calculation, shallow foundation design, deep foundation design, earth retaining structures design, braced earth retaining structures design, and cellular cofferdams design.

339038 土壤動力學 **3 選 蔡孟豪** **下**

簡介一次及二次自由度系統，應力波在彈性體之傳遞，土壤之動力特性，考慮動力系統下基礎，地震之特性，土壤與結構之相互作用，基礎之分離，動力作用下之側向土壓。

339038 Dynamics of Soils and Foundations **3 S M.H.Tsai** **S**

This course presents the principles of vibrations, wave propagation theory, earthquake phenomenon and their associated problems. Subjects covered in this course include : fundamental of vibrations, wave propagation theory, properties of dynamically loaded soils, ground motions and soil liquefaction during earthquake, lateral earth pressure on retaining walls during earthquake, theory and analysis of foundation vibration, and others related subjects.

339039 水資源系統分析 **3 選 丁澈士** **下**

本課程主要在介紹如何利用系統分析之技術來處理各種水資源開發規劃時所面臨之問題，授課內容包括：線性規劃，動態規劃，水資源系統之不確定性，河川流域確定性模式分析，河川流域時變性模式分析，灌溉系統操作分析，水庫給水操作模式。

339039 Water Resources System Planning and Analysis **3 S C.S.Ting S**

The objective of the course is prepared for the students in learning how to use the method of the system analysis to solve the problem of water resource developing and planning processes. The major contents in the course include linear programming, dynamic programming, deterministic river basin modeling, stochastic and operation, reservoir operating rule.

339040 地下水補注 **3 選 丁澈士 下**

地下水資源補助是自然科學與社會的交叉科學。課程大綱:緒言、地下水資源管理概述、地下水流方程式、地下水質及污染傳輸、地下水管理模式、地下水管理最佳化法、地下水資源分配模式、地下水質模式、地下水系統反向推求法等章。

339040 Groundwater Recharge **3 S C.S.Ting S**

The course of groundwater resources management involves the allocation of groundwater supplies and water quality to competing water demands and uses. The main contents of course contain such as: groundwater resources, groundwater flow equations, groundwater quality: The mass transport problem, numerical methods in groundwater management, optimization methods for groundwater management, groundwater supply management models, groundwater quality management models, the inverse problem in groundwater systems.

339041 地下水管理 **3 選 丁澈士 下**

地下水資源管理是自然科學與社會的交叉科學。課程大綱:緒言、地下水資源管理概述、地下水流方程式、地下水質及污染傳輸、地下水管理模式、地下水管理最佳化法、地下水資源分配模式、地下水質模式、地下水系統反向推求法等章。

339041 Groundwater Management **3 S C.S.Ting S**

The course of groundwater resources management involves the allocation of groundwater supplies and water quality to competing water demands and uses. The main contents of course contain such as: groundwater resources, groundwater flow equations, groundwater quality: The mass transport problem, numerical methods in groundwater management, optimization methods for groundwater management, groundwater supply management models, groundwater quality management models, the inverse problem in groundwater systems.

339042 地下水模式分析 **3 選 丁澈士 下**

本課程主要介紹利用數值方法來計算地下水流之行為，課程內容包括：地下水模式概論，控制方程式介紹，有限差分法之應用，有限元素法之應用，邊界元素法之應用，其他方法之應用，常用模式介紹。

339042 Groundwater Modeling Analysis **3 S C.S.Ting S**

Introduction to groundwater models, Governing equations, Application of finite difference method, Application of finite element method, application of boundary element method, Application of other methods and usually analytical methods.

339043 計算流體力學 **3 選 柯亭帆 下**

本課程主要介紹利用數值方法計算流體流動之行為，課程內容包括：1. 有限元素簡介與形狀函數 2. 其他數值方法介紹 3. 有限元素方程式之解答與正確性 4. 不可壓縮流 5. 可壓縮流 6. 其他問題如熱流、擴散等

339043 Computational Fluid Dynamics 3 S T.F.Kerh S

The Continuum Approximation; Conservation of Mass & Momentum; Stress Tensor for Newtonian Fluids; Accelerating Coordinate Systems; Non-Dimensional Variables; Poiseuille Flow; Unsteady Motion of a Plate Wall; Definition of Boundary Layer; Boundary Layer in Rotating Flow; Flow Between Rotating Disks; Flow About Cylinder, Sphere; Unsteady Flow About Spheres; Flow in Porous Media Rubble-Mound Breakwater.

339044 灌溉管理 3 選 陳鈞華 下

本課程目標是對於農業水資源系統中以最少灌溉成本達成最佳產量，此代表意義為系統之規劃、設計、新建及維護管理達到效率最佳化。灌溉雖是將水適時適量提供作物生育所需，所具備「生產」機能，現今強調彰顯「生態、生活」機能。水及土地資源使用合理規劃可為環境改善之里程碑，結合農業水資源利用之農地重劃政策推行將形成新契機。灌溉排水最佳化將可達成環境改善及在單位耗水量下達到單位產量增加等機會。現今科技下對於灌溉管理仍有研究發展空間。

339044 Irrigation Management 3 S J.H.Chen S

The goal of the course is utilized to probe better production at lower costs and explore means to optimize the efficiency of planning, design, construction, operation and maintenance of water resources systems. Water brought to raw land by the technology of irrigation has transformed large areas into dependable, sustained productivity and wealth. It changed a hostile natural environment into one friendly to man and to his living and economic needs. Water use planning and land use planning must be coordinated to form the cornerstone of environmental improvement. New opportunities will emerge as land use policies are defined and water use is related to the changing picture. Optimizing irrigation and drainage systems will provide excellent opportunity for achieving environmental enhancement with concomitant increases in unit yield per unit water consumed. We have a long way to go, but much can be done now with present technology. There are evident in the exciting trends towards increased efficiencies in the operation of irrigation systems and the application of irrigation water.

339045 鋪面設計 3 選 盧俊愷 下

本課程包含：柔性鋪面之應力與應變、剛性鋪面之應力與撓度、交通量及載重、材料特性、地下排水設計、鋪面成效、柔性鋪面設計、剛性鋪面設計、加鋪設計。

339045 Pavement Design 3 S J.K.Lu S

The topics of course include: Introduction, Stress & Strain in Flexible Pavements, Stress & Strain in Rigid Pavements, Traffic Characteristics, Characterization of Materials, Flexible Pavement Design, Rigid Pavement Design, Pavement Rehabilitation

339046 精實營建系統 3 選 柯千禾 下

本課程之目的在讓學生了解製造系統的基本行為，並具備將其應用於營建管理之能力，內容包含精實營建定義，製造業發展沿革，即時生產，推式與拉式生產，與最後規劃者系統。

339046 Lean Construction Systems 3 S C.H. Ko S

This course introduces the underlying behavior of manufacturing systems. Through the course, students can identify opportunities for improving existing systems using lean concepts. Contents of the course include: definition of lean construction, manufacturing history, the JIT revolution, push and pull production systems, and The Last Planner.

339047 營建生產力分析 **3 選 柯千禾** **下**

本課程之目的在讓學生了解營建生產力分析之基本知識，並具備將其應用於營建管理之能力，內容包含營建生產力內涵介紹，營建生產力分析方法，營建生產力案例分析，與專題研究報告。

339047 Construction Productivity Analysis **3 S C.H.Ko** **S**

This course introduces the basic concept of construction productivity. Through the course, students can identify opportunities for improving construction productivity. Contents of the course include: definition of construction productivity, construction productivity analysis methods, case studies for construction productivity improvement, and application projects.

339048 結構可靠度分析 **3 選 吳志興** **下**

本課程首先簡單介紹常用在結構可靠度應用之機率分佈，包括常態、對數常態、極限型態 I、II 和 III、均佈、包松和伽馬等分佈。然後介紹非相關常態隨機變數之和函數和非相關對數常態隨機變數之積函數，並討論蒙地卡羅模擬法、拉丁超幾何取樣法和羅森布魯斯點估計法等解結構可靠度問題之方法。由於結構失敗之可靠度和機率為載重和阻抗之函數，載重模型和阻抗模型也於課程中介紹之。

339048 Structural Reliability Analysis **3 S C.H.Wu** **S**

The course first briefly reviews the probability distributions commonly used in structural reliability applications, which include the normal, lognormal, extreme types I, II and III, uniform, Poisson and gamma distributions. Then the sum of uncorrelated normal random variables and the product of uncorrelated lognormal random variables are introduced. The Monte Carlo simulation technique, the Latin hypercube sampling method and the Rosenblueth's point estimate method are discussed. Since structural reliability and probability of failure are considered as functions of load and resistance, the load model and resistance model are also discussed.

339049 崩塌地治理 **3 選 許中立** **上**

本課程在探究崩塌地之前因後果，瞭解其地質、地形與水文等背景資料，崩塌地調查與分析之方法，並進一步以現場實例分析，試圖解決實際之防災問題，以對崩塌地之安定及山坡地之開發利用有更深刻的認知。

339049 Landslide Control **3 S C.L.Hsu** **F**

The objective of this course is to explore the entire process of the landslide, understand the background materials of the geology, topography, hydrology and the landslide investigation and analytical methods. And step forward with the instance of locality, trying solving the practical disaster prevention problem. Let students have the deeper cognition in the stability of the landslides and development of the slopeland areas.

339050 坡地微氣候學 **3 選 唐琦** **上**

本課程藉輻射收支、局部環流及水汽儲留等微氣候觀測技術及資料分析，以探討坡地於近表土層及氣層之微氣候特性，進而了解地形及地貌對微氣候間之關係，使習者能對坡地資源開發決策有所依循。

339050 Hillslope Microclimateology**3 S C.Tang F**

This course will study the observation techniques and data analysis for hillside microclimatology, which include heat budget, local circulation, and air vapor variation. To study the properties of microclimatology for the nearby ground surface within air layer and under soil layer in this course. By the course will give the graduate students a more realization in the relationships among topography, geography and microclimatology, it would be helpful to make a decision of on hillside resources development.

339051 土壤沖蝕**3 選 吳嘉俊 上**

本課程旨在介紹與土壤沖蝕相關的數值模擬模式，以便讓學生瞭解國際間研究團體或個人如何利用過去對於土壤沖蝕機制相關的研究成果於土壤沖蝕模擬模式的建立。本課程需要先行修過土壤沖蝕的基礎課程，並必須瞭解通用土壤流失公式如何估算土壤流失量的原理。本課程將以模式的概論談起，進而介紹目前土壤沖蝕研究常用的經驗模式與物理機制模式，同時讓學生瞭解目前國際間對於土壤流失量模擬的最新發展，最後在由所介紹的模式中任選一個模式讓學生學習操作。

339051 Advanced Soil Erosion**3 S C.C.Wu F**

This course is emphasized on in-depth introduction of soil erosion related numerical simulation models so that students can get the inside view of how knowledge accumulated from past erosion mechanics research is used in building simulation models. Soil erosion course is required as prerequisite for this course, basic skill in estimating soil loss using Universal Soil Loss Equation is also required. This course starts with brief introduction of erosion models, follows by most frequently referred empirical and physical process based numerical models. The latest development worldwide in the area of soil loss estimation and erosion process simulation will be briefly covered in the course. One simulation model will be selected in the course as laboratory exercise.

339052 河川型態學**3 選 吳嘉俊 上**

本課程之主要目的在於介紹高等河川力學，包括：台灣特有之地形、地質特性介紹、流域與水系、山區河流、平地河流、彎曲河流、與河口段之河床演變、沖積河流之自動調節作用、水庫上、下游之河床演變河床變動量之計算。

339052 River Morphology**3 S C.C.Wu F**

This main purpose of this course is introduced the Advanced Fluvial Hydraulics, including: Introduction to topography and geology in Taiwan, Basin and body of water, The channel changes of stream in mountain region, flats, curved and outlet, The alluvial stream and automatic regulate, Calculate the channel variable of upstream and downstream in reservoir.

339053 風險評估與管理**3 選 柯千禾 上**

本課程在介紹風險評估方法與風險管理技術。課程內容包括機率論、貝氏統計、土木災害種類與風險、風險評估方法及風險管理方法。

339053 Risk Assessment and Management**3 S C.H.Ko F**

The course presents the risk assessment methods and risk management technologies. The course includes probability theory, Bayesian statistics, disaster types and risk in civil engineering, risk assessment methods, and risk management methods.

339054 灌溉排水工程**3 選 陳鈞華 上**

本課程主要引導學生閱讀灌溉與排水相關文獻，並使學生瞭解灌溉與排水相關議題之研究近況與使用之方法，以增加學生對此議題之研究能量。

339054 Irrigation and Drainage Engineering 3 S J.H.Chen F

The major purpose of this course is to guide students to review the irrigation and drainage engineering topics and to enhance the research ability and methodology in this field.

339055 塑性力學 3 選 鍾文貴 上

廣義張量分析，基本定律，有限變形理論及應力、應變張量，塑性之本構關係，變分原理，小位移變形彈塑性 Eulerian 有限元素法，接觸力學，貫穿力學。

339055 Theory of Plasticity 3 S W.G.Chung F

Elastic tress-strain relationship, Yield criteria, Flow rule, Constitutive equation of plasticity, Hydrostatic pressure independent material, pressure dependent material.

339056 災害管理學 3 選 林金炳 上

本課程在介紹災害管理方法，課程內容包括災害種類與致災原因、國內外災害管理比較、災害應變管理、災害管理政策、災害管理資訊系統。

339056 Disaster Management 3 S J.B.Lin F

The course present the disaster management methods. The subject includes disaster types and cause reason, disaster response and management methods and policies.

339057 災害應變 3 選 林金炳 上

本課程在介紹各種災害之應變相關主題探討，課程內容包括災害種類與應變作為，災害應變中心之運作及資訊之解讀與決策。

339057 Disaster Response 3 S J.B.Lin F

The course introduce the relative topics of disaster reponse. The subject includes disaster types and its reponse, the operation and information processing and decision of reponse center of disaster.

339058 工程品質與管理 3 選 柯千禾 上

本課程主要探討土木工程施工品質的內容及管理之方法，藉由諸如統計品管，QC 七大手法，ISO9000 等品管技能與精義，探討改進土木工程施工品質，防止土木災害的相關技術。

339058 Engineering Quality and Management 3 S C.H.Ko F

This course will discuss the construction quality of civil engineering in detail. Form the learning of statistical quality, QC seven tools and ISO 9000,students can understand how to improve the quality and prevent the accident of civil engineering.

339059 土壤行為 3 選 王弘祐 上

土壤構造；土壤礦物；土壤化育；土壤水份；電雙層理論；黏土礦物分析與土壤組成；土壤組成與工程特性；土壤結構與土壤穩定；土壤有效應力及總應力變異分析；土壤容積變異行為分析；土壤強度與土壤變形行為分析；土壤水份流動與電滲流；冰凍與解凍之土壤行為(凍土土壤行為)；土壤壓密行為；土壤潛變行為與工程結構物破壞；結論。

339059 Soil Behavior 3 S H.Y.Wang F

Soil aggregate and clay minerals; Soli effective stress analysis; Compaction and consolidation of soil; soil permeability; Filter design and flow nets application;Two and three-dimensional problems on soil; elastic-plastic theory and soil failure behavior.

339060 大地工程施工學 3 選 王弘祐 上

本課旨在介紹各種基礎工程施工。課程摘要可分：概說、基礎種類、基礎之支承力、支承力試驗、基礎開挖、直接基礎、樁基概說、製造、打擊之法、場樁施工、穩定液泥水管理、反循環鑽掘工法、貝諾特工法、土鑽工法、預壘樁、深基礎工法、開口沈箱、地下連續壁、地錨、地下構造物、水平方向推進工法、托底工法。

339060 Geotechnical Engineering Construction 3 S H.Y.Wang F

With the knowledge of Soil Mechanics and Foundation Engineering, a series of underground construction methods will be elaborated. They are slurry diaphragm wall, pile foundation (reverse, or cased), anchor system, foundation excavation, drainage system, bracing system and monitoring system etc.

339061 區域水資源規劃 3 選 王裕民 上

本課程主要介紹區域性之水資源規劃原理，課程內容包括：1. 水資源規劃層次、階段、目標 2. 規劃計劃的預測與評估 3. 規劃之環境影響考慮因素 4. 規劃之系統分析 5. 多目標用途的功能及相容性

339061 Regional Water Resources Planning 3 S Y.M.Wang F

This course contains the following subjects: The planning process and national development objectives in water resources; Forecasting and information management; Environmental crisis and management; System analysis; Multipurpose and a broadened curriculum in water resources.

339062 集水區經營管理 3 選 林金炳 上

本課程主要介紹集水區經營與管理方法，課程內容包括：1. 集水區之分類 2. 集水區所面臨之問題 3. 集水區之林業經營與管理 4. 集水區之坡地水工保持計劃 5. 集水區防砂計劃。

339062 Water Shed Management 3 S J.B.Lin F

This course contains the following subjects: The classification of water shed; The current problems of water shed; Forecasting and information management of water shed; Environmental crisis and management of water shed; The planning of water shed.

339063 輸砂力學 3 選 林金炳 上

本課程旨在介紹天然河川之泥砂運動機制，討論泥砂生產及運移之力學理論。其內容包含懸移質及推移質輸砂理論，並由河相學之理論以宏觀現象討論泥砂之形狀變化及輸砂量之改變，使學生具備集水區治理之泥砂量估算能力。

339063 Sediment Transport 3 S J.B.Lin F

This course focuses on the mechanism of sediment transportation in a watershed to investigate the sediment yield and its transport. The subject includes theories of suspended load and bed load transportation. In addition, the theory of river morphology is used to discuss too. This course will make the students possess the basic ability to evaluate the sediment quantity in a watershed.

339064 環境流體力學 3 選 柯亭帆 上

本課程介紹利用流體力學解決環境問題之方法。課程包括流場方程式，物質之反應，擴散方程式與河川污染解析。

339064 Environmental Fluid Mechanics 3 S T.F.kerh F

The course presents the theories of fluid mechanics to solve environmental problems. The subject includes governing equations of flow field, reaction of pollutant, diffusion equation and analysis of river pollution.

339065 複合材料力學 3 選 鍾文貴 上

簡介複合材料的組成及應用。複合材料實驗方法。單層材料之巨觀機械性質與力學行為。單層材料之等向性與異向性彈性力學。疊層材料問題--疊層材料的巨觀機械性質與力學行為。疊層材料之強度、剛度、彎曲、扭曲和振動。複合材料之熱效應。複合材料之破壞法則。

339065 Mechanics of composite materials 3 S W.G.Chung

The objective of this course is to introduce the basic concepts of the mechanical behavior of composite materials as well as their applications in engineering use. The main contents of this class are: Introduction of composite materials, Mechanical behavior of a laminate material, Engineering applications of composite materials.

339066 坡地工程 3 選 許中立 下

本課程經由原理的了解、現場的調查驗證等深入體會坡地中各種有關之工程的規劃設計分析方法。坡地工程預定涵蓋土壤力學、岩石力學、水力學與結構工程等與坡地有關之學門，以綜合檢討之方法介紹其要義，包括：坡地安定原理、坡地安定調查、坡地安定分析、坡地安定工程處理之規劃設計、岩石邊坡的穩定、水土保持技術、坡地安定監測方法。

339066 Hillslope Engineering 3 S C.L.Hsu S

The objective of this course is discussed about the analysis method of planning and designing on slopeland by understanding theories and investigation of spot. The course is included the knowledge of soil mechanics, rock mechanics, hydrology, construction engineer on slopeland by conclusion discussing method. The content is: Stability of Sloeland Theory, Stability of Sloeland Investigation, Stability of Sloeland Analysis, The Planning and designing of Stability of Sloeland Engineering, Safety of Rock Sloeland, The Technology of Soil and Water Conservation, The Superintendence of Stability of Sloeland.

339067 坡地氣候調查與分析 3 選 唐琦 下

本課程介紹如何針對特定坡地區域蒐集各種氣象要素如日射量、日照時間、氣溫、降雨量、風速及風向等，並分析各項要素與地形條件之關係，繪製與解析各項氣候資源要素之時間與空間分佈，進而提供習者對坡地氣候資源深入了解。

339067 Investigation and Analysis for Hillslope Climatic Resources 3 S C.Tang S

This course will introduce the collection of microclimate elements, which were included as solar radiation, sunshine duration, air temperature, precipitation, wind speed and wind direction. To discuss the relationship between topography and microclimate elements, then teach the graduate students to analysis its variations of time and space. By the course will give the graduate students a more realization in hill microclimatology.

339068 災害防救法規 3 選 葉一隆 下

本課程針對災害防救相關法規進行探討，包括災害防救法與災害防救基本法，使學生瞭解該些法規之立法目的與內涵，及相關文獻介紹。

339068 Disaster Prevention and Mitigation Legislation 3 S Y.L.Yeh S

The course presents the disaster prevention and mitigation legislation. The legislation includes disaster prevention and mitigation laws and the basic laws of disaster prevention and mitigation. The purpose of this course to explain the aims and thoughtfulness of articles and introduce the relative bibliographies.

339069 結構穩定

3 選 盧俊愷 下

穩定概念，穩定分析之各種基本解決法與實例，樑柱之穩定，鋼架之穩定，扭轉穩定，樑之側向穩定，圓環與拱架之穩定，平板之穩定，薄殼穩定，彈性基礎之穩定，非保守系統之穩定。

339069 Theory of Structural Stability

3 S Y.W.Liu S

Stability concept, Stability analysis of various basic methods and examples, Stability of beam-column, Stability of frames, Torsion stability, Lateral stability of beams, Stability of rings and arches, Stability of plates, Stability of shells, Stability of elastic foundation, Stability of non-conservation system.

四年制時尚設計與管理系

(一)教育目標

培育時尚設計與管理領域之管理、諮詢、企劃與技術研發之專業人才，教育學生將服飾之科學理念，應用在技術的操作與品質的提升上，使科學研究之成果與技術相互配合，並充分應用於服飾產業，俾成為發展國內外企業及服飾相關機構之高級專才。

(二)校定共同必修科目

中 文 科 目 名 稱 英	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	
通識課程 General Education	12	2	2	2	2	2	2			
國文 Chinese	4	2	2							
大一英文 Freshman English	4	2	2							
英語聽講練習 101~104 Oral-Aural Training in English	2	0	0	1	1					
憲法 Constitution	2			2						
體育 Physical Education	2	1	1							
軍訓 Military Training	0	0	0							
生活服務教育 Student Life Service Education	0	0	0							
通識教育講座 Lectures on General Education	1									各系依序開 課，開課學期 不定
外語實務 Foreign Language Proficiency Test	0									每學期開放 修課 畢業前修畢
合 計	27	7	7	5	3	2	2			

(三) 學院共同必修科目

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	
管理學 Management	3	3								
經濟學 Economics	3	3								
會計學 Accounting	3		3							
電子計算機概論 Introduction to Computers	0			0						
統計學(一) Statistics (I)	2			2						
統計學(二) Statistics (II)	2				2					
實務專題 Special projects	2							1	1	
合 計	15	6	3	2	2			1	1	

(四)專業必修科目

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	
服裝材料學 Textiles and Clothing Materials	2		2							
服裝材料學實驗 Lab. of Textiles and Clothing Materials	1		1							
服飾概論 Introduction to Apparel	2	2								
色彩學 Color	2	2								
色彩學實習 Practice of Color	1	1								
服裝畫 Fashion Illustration	3		3							
人體工學 Human Engineering	3			3						
服飾行銷學 Fashion Marketing	3		3							
服裝設計 Fashion Design	2			2						
服裝設計實習 Practice in Fashion Design	1			1						
消費者行為學 Consumer Behavior	3			3						
織品品質鑑定學 Textile Goods with Quality Identification	2							2		
織品品質鑑定學實驗 Lab. of Textile Goods with Quality	1							1		
服裝構成學 I Clothing Construction I	2				2					
服裝構成學實習 I Practice of Clothing Construction I	1				1					
服飾商品企劃 Fashion Merchandising	3						3			
實務實習 Internship in Fashion Design	2							2		
護膚學 Skin Care and Beauty Therapy	2	2								
護膚學實習 Practice of Skin Care and Beauty Therapy	1	1								
化妝品學 Cosmetology	3			3						
彩妝設計 Makeup Design	2				2					
彩妝設計實習 Practice of Makeup Design	1				1					

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	
美容學 Facial	1		1							
美容學實習 Practice of Cosmetology	2		2							
創意染色設計與應用 Dyeing of Textile Goods	2				2					
創意染色設計與應用實習 Innovative Dyeing of Textile Goods	1				1					
流行產業研究法 Fashion Apparel Market Research	3					3				
合 計	52	8	12	12	9	3	3	5	0	

(五)專業選修科目

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	
服飾零售學 Fashion Retailing	3				3					
織品整理學 Finishing of Textile Goods	1					1				
織品整理學實習 Lab. of Finishing on Textile Goods	2					2				
美姿美儀(含實習) Posture	1							1		
服飾商品學 Apparel Merchandise	3			3						
成衣打版 Pattern Making	2						2			
成衣打版實習 Practice of Pattern Making	1						1			
品牌經營管理 Branding Management	3							3		
專業外語 Foreign Language For Professional Knowledge	2					2				
高科技織品研發 Develop of High Technology Textile	2						2			
高科技織品研發實習 Practice of Develop of High Technology Textile	1						1			
服裝構成學 II Clothing Construction II	2						2			
服裝構成學 II 實習 Practice of Clothing Construction II	1						1			
電腦輔助成衣設計打版 Computer-Aided-Design in Pattern Making	2							2		
電腦輔助成衣設計打版實習 Practice of Computer-Aided-Design in Pattern Making	1							1		
服飾電子商務與資訊管理 E-Commerce in Apparel Business	2							2		
服飾電子商務與資訊管理實習 Practice of E-Commerce in Apparel Business	1							1		

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	
立體裁剪 Draping	2					2				
立體裁剪實習 Practice of Draping	1					1				
時尚採購學 Fashion Buying	3				3					
整體造型設計 Overall Shape Design	2							2		
整體造型設計實習 Practice of Overall Shape Design	1							1		
時尚美學 Fashion Aesthetics	3	3								
時尚設計史 Fashion History	2		2							
時尚推廣學 Fashion Promotion	3									
布料設計 Textiles	1			1						
布料設計實習 Practice of Textiles	2			2						
電腦輔助設計 Computer-Aided-Design in Apparel, and Practice of Computer-Aided-Design	2				2					
電腦輔助設計實習 Practice of Computer-Aided-Design in Apparel	1				1					
流行飾品設計實習 Practice of Fashion Handicraft	2				2					
彩繪化妝 Body Painting	2					2				
彩繪化妝實習 Practice of Body Painting	1					1				
服務業行銷 Service Marketing	3					3				
文化創意設計與應用 Folk Costume	2						2			
文化創意設計與應用實習 Practice of Folk Costume	1						1			
流行素材開發與應用 Develop and Application of Fashion Material	2								2	

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	
流行素材開發與應用實習 Practice of Develop and Application of Fashion Material	1								1	
美容產業經營 Beauty Business Management	3								3	
顧客關係管理 Customer Relationship Management	3								3	
合 計	72	3	2	6	11	12	12	13	9	

國立屏東科技大學 時尚設計與管理系 課程規劃表

學年	第一學年				第二學年			
學期	第一學期		第二學期		第一學期		第二學期	
修別	科目	學分	科目	學分	科目	學分	科目	學分
必修	體育	1	體育	1	通識課程	2	通識課程	2
	軍訓	0	軍訓	0	英語聽講練習 103	1	英語聽講練習 104	1
	國文	2	國文	2	憲法	2	統計學(二)	2
	英文	2	英文	2	電子計算機概論	0	服裝構成學 I	2
	通識課程	2	通識課程	2	統計學(一)	2	服裝構成學實習 I	1
	英語聽講練習 101	0	英語聽講練習 102	0	人體工學	3	彩妝設計	2
	生活服務教育	0	生活服務教育	0	服裝設計	2	彩妝設計實習	1
	管理學	3	會計學	3	服裝設計實習	1	創意染色設計與應用	2
	經濟學	3	服裝畫	3	消費者行為學	3	創意染色設計與應用實習	1
	色彩學	2	服飾行銷學	3	化妝品學	3	外語實務(註 3)	0
	色彩學實習	1	美容學	1	外語實務(註 3)	0		
	護膚學	2	美容學實習	2				
	護膚學實習	1	服裝材料學	2				
	服飾概論	2	服裝材料學實驗	1				
修	外語實務(註 3)	0	外語實務(註 3)	0				
小計		21		22		19		14
選修	時尚美學	3	時尚設計史	2	服飾商品學	3	時尚採購學	3
					布料設計	1	服飾零售學	3
					布料設計實習	2	電腦輔助設計	2
							電腦輔助設計實習	1
							流行飾品設計實習	2
小計		3		2		6		11

國立屏東科技大學 時尚設計與管理系 課程規劃表

學年	三 學 年				四 學 年				學分總計
	第 一 學 期		第 二 學 期		第 一 學 期		第 二 學 期		
修別	科 目	學 分	科 目	學 分	科 目	學 分	科 目	學 分	
必 修	通識課程 流行產業研究法 外語實務(註3)	2 3 0	通識課程 服飾商品企劃 實務專題 外語實務(註3)	2 3 1 0	英文實務 實務專題 織品品質鑑定學 織品品質鑑定學實習 外語實務(註3)	0 1 2 1 0	實務實習 外語實務(註3)	2 0	
小 計		5		6		4		2	93
選 修	織品整理學 織品整理學實習 彩繪化妝 彩繪化妝實習 服務業行銷 專業外語 立體剪裁 立體剪裁實習	1 2 2 1 3 2 2 1	高科技織品研發 高科技織品研發實習 成衣打版 成衣打版實習 服裝構成學Ⅱ 服裝構成學實習Ⅱ 文化創意設計與應用 文化創意設計與應用實習 時尚推廣學	2 1 2 1 2 1 2 1 3	電腦輔助成衣設計打版 電腦輔助成衣設計打版實習 美姿美儀(含實習) 服飾電子商務與資訊管理 服飾電子商務與資訊管理實習 品牌經營管理 整體造型設計 整體造型設計實習	2 1 1 2 1 3 2 1	顧客關係管理 流行素材開發與應用 流行素材開發與應用實習 美容產業經營	3 2 1 3	
小 計		14		15		13		9	73

註：1.本系學生至少應修滿 **131** 學分始得畢業(其中必修應修 **91+1(通識教育講座)** 學分，選修應修 **39** 學分)

2.學生於畢業前需修習「通識教育講座」1學分課程。各系依序開課，開課學期不固定。

3.«外語實務»每學期皆開放修課，並須於畢業前依本校「外語實務課程實施要點」規定修畢。

時尚設計與管理系

Department of Fashion Design and Management

課程代號 Course Number	科目名稱(中 文) Course (Chinese)	學分 Credite	科目名稱(英 文) Course (English)	頁次 Page
一、專業必修科目 Required Courses				
802001	服裝材料學	2	Textiles and Clothing Materials	
802002	服裝材料學實驗	1	Lab. of Textiles and Clothing Materials	
802003	服飾概論	2	Introduction to Apparel	
802004	色彩學	2	Color	
802005	色彩學實習	1	Practice of Color	
802006	服裝畫	3	Fashion Illustration	
802007	人體工學	3	Human Factors Engineering	
802008	服飾行銷學	3	Fashion Marketing	
802009	服裝設計	2	Fashion Design	
802010	服裝設計實習	1	Practice in Fashion Design	
802011	消費者行為學	3	Consumer Behavior	
802012	織品鑑定學	2	Textile Goods with Quality	
802013	織品鑑定學實驗	1	Lab. of Textile Goods with Quality	
802014	服裝構成學 I	2	Clothing Construction I	
802015	服裝構成學實習 I	1	Practice of Clothing Construction I	
802016	服飾商品企劃	3	Fashion Merchandising	
802017	實務實習	2	Internship in Fashion Design and Management	
802018	護膚學	2	Skin Care and Beauty Therapy	
802019	護膚學實習	1	Practice of Skin Care and Beauty Therapy	
802020	彩妝設計	1	make-up	
802021	彩妝設計實習	2	Practice of Makeup Design	
802022	化妝品學	3	Cosmetology	
802023	美容學	2	Facial	
802024	美容學實習	1	Cosmetology Practice	
802025	創意染色設計與應用	2	Dyeing of Textile Goods	
802026	創意染色設計與應用實習	1	Lab: Innovative Dyeing of Textile Goods	
802027	流行產業研究法	3	Fashion Apparel Market Research	
Course Number	Course (Chinese)	Credite	Course (English)	Page

二、專業選修科目 Elective Courses

802028	服飾零售學	3	Fashion Retailing
802029	織品整理學	1	Finishing of Textile Goods
802030	織品整理學實習	2	Lab. of Finishing on Textile Goods
802031	美姿美儀(含實習)	1	Posture
802032	服飾商品學	3	Apparel Merchandise
802033	成衣打版	2	Pattern Making
802034	成衣打版實習	1	Practice of Pattern Making
802035	品牌經營管理	3	Branding Management
802036	高科技織品研發	2	Develop of High Technology Textile
802037	高科技織品研發實習	1	Practice of Development of High Technology Textile
802038	電腦輔助設計	2	Computer-Aided-Design in Apparel
802039	電腦輔助設計實習	1	Practice of Computer-Aided-Design in Apparel
802040	服裝構成學Ⅱ	2	Clothing Construction II
802041	服裝構成學Ⅱ實習	1	Practice of Clothing Construction II
802042	電腦輔助成衣設計打版	2	Computer-Aided-Design in Pattern Making
802043	電腦輔助成衣設計打版實習	1	Practice of Computer-Aided-Design in Pattern Making
802044	服飾電子商務與資訊管理	2	E-Commerce in Apparel Business
802045	服飾電子商務與資訊管理實習	1	Practice of E-Commerce in Apparel Business
802046	流行素材開發與應用	2	Development and Application of Fashion Materials
802047	流行素材開發與應用實習	1	Practice of Developing Fashion Materials
802048	立體裁剪	2	Draping
802054	時尚設計史	2	History of Fashion
802055	時尚促銷學	3	Fashion Promotion
802056	布料設計	1	Textiles
802057	布料設計實習	2	Practice of Textiles
802058	流行飾品設計實習	2	Practice of Fashion Accessory
802059	彩繪化妝	2	Body Painting
802060	彩繪化妝實習	1	Practice of Body Painting
802061	服務業行銷	3	Service Marketing
802062	文化創意設計與應用	2	Folk Costume
802063	文化創意設計與應用實習	1	Practice of Folk Costume
802064	美容產業經營	3	Beauty Business Management
802065	顧客關係管理	3	Customer Relationship Management

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一、必修科目

Prerequisites

802001 服裝材料學

2 必 賴顯松、上

講述服裝原料之纖維、紗線、織物、編織物、不織布等的製法，以及物理的、化學的、機械的特性。課程內容包括纖維結構、纖維密度、濕、熱性質、抗張性質、時間效應及纖維化學特性等。

802001 Textiles and Clothing Materials

2 R Sang Song Lai、F

Study of textile materials such as fiber, yarn, woven fabric, knitted fabric, nonwoven fabric production techniques and their physical, chemical, and mechanical properties. The course covers fiber structure, fiber density, moisture, thermal property, tensile property, time effect, fiber chemical property, etc.

802002 服裝材料學實驗

1 必 賴顯松、上

練習纖維製品之定量、定性鑑別，以及物理、化學及力學性能實驗。課程內容包括實驗概論、纖維結構與品質、紗結構性能、織物結構性能、抗張強度實驗及纖維化學特性等。

802002 Lab of Textiles and Clothing

1 R Sang Song Lai、F

Practice of quantitative and qualitative materials validation on properties of material in terms of physics, chemistry, and mechanics. Course contents include the introduction to experimentation, fiber structure and quality, yarn structure, fabric structure and properties, tensile strength experiment, and fiber chemical properties.

802003 服飾概論

2 必 徐秀如、上

針對服裝的起源、服裝的變遷、服裝的目的、服裝的形態與構成、服裝的造型史、服裝的色彩與設計、服裝的材料與管理、染色加工與整理、人體與環境、服裝衛生、服飾行銷、衣服的消費與環境等相關知識的概說。

802003 Introduction to Apparel

2 R Hsiu Ju Hsu、F

This course covers an introduction of the origin, development, purpose, formation/construction, color, design, clothing material & management, dyeing processing and finishing, human body & environment, attire & hygiene, apparel marketing, garment consumption & environment.

802004 色彩學

2 必 葉曾欽、上

講授有關色彩應用上的基本法則，期使學生經由認識色彩、欣賞色彩，並能利用色彩美化人生。課程之主要內容包括色彩的本質、色彩的體系、色彩的感覺、色彩的混合與配色聯想、色彩的視覺效果及安全色彩。

802004 Color

2 R TsengChin Yeh、F

This course focuses on the basic rules of color applications, including the nature of color, the system of color, sense of color, combination of color, and color selection. Students are expected to be able to recognize, appreciate, and eventually beautify their lives throughout the course.

802005 色彩學實習

1 必 葉曾欽、上

教導學生製作十二色相色卡、無彩色十一階明度色相、十階彩度色相、色立體色相面、色彩對比 color contrast、色彩的感、分析服飾配色之色彩調和等，使用色彩擁有美麗的人生，利用色彩美化居住環境、衣著以及生活。

802005 Practice of Color

1 R TsengChin Yeh、F

The course concentrates on how to make color schemes (12-color cards), colorless lightness hue (11 levels), colored lightness hue (10 levels), three-dimensional color scheme, contrast, and analyzing the color harmony of apparels. The theories can be applied to beautifying students' living environment, dressing and their daily lives.

802006 服裝畫

3 必 柯雪琴、下

介紹基本服裝畫技法及各種服裝素材的畫法，學習在人體上著裝時的各種形態畫法，運用各種不同的畫材呈現各種不同的風格，引導利用配色及著色技法做服裝設計的呈現並學習靜態展的呈現方法。

802006 Fashion Illustration

3 R Hsueh Chin Ko、S

Introduce the basic dress painting skill method and various techniques of painting clothing material. Learn to apply various techniques of human body painting, make use of various different painting materials to present various styles, learn the skill of using nuance and applying color in costume design, and learn method of presentation in the static state exhibition.

802007 人體工學

3 必 柯雪琴、下

講述人體工學之定義，人體計測法，人體因素計測法，和從人體因素看被服構成。藉由理解人體型態的基礎結構及人體機能的需求，掌握服裝與人體之間的合理條件，再注入服裝設計與製作，境而達到穿衣的舒適性及提升服裝學術研究領域。

802007 Human Factors Engineering

3 R Hsueh Chin Ko、S

The course covers the definition of human factors engineering, body measurement method, human factors measurement method, and human factors that constitute clothing construction. Anatomy and physiological needs are incorporated in the apparel design and production to provide 'dressing for comfort' and advance in academic research.

802008 服飾行銷學

3 必 徐秀如、下

了解紡織及服裝工業與行銷的關係。學習發展，促銷，廣告與零售技巧之需求，以便學生能成功進入就職市場。主要目的是整合其創造力和服裝產業的商業型態，結合專業的流行教育及結實的行銷與管理的背景。

802008 Fashion Marketing

3 R Hsiu Ju Hsu、S

Fashion Marketing investigates the relationship between fashion industry and marketing. Learning the development, promotion, advertising, and retailing skills needed to enter the marketplace and succeed. The major integrates the creative and business aspects of the Fashion industry, combining a specialized education in Fashion with a solid background in Marketing and Management.

802009 服裝設計

2 必 柯雪琴、上

引導學習對現今流行動向的分析方法及解讀方式，指導使用多彩布料作配色調色及圖案設計練習方法及學習意義，探討學習用各種不同材質做引導設計的方法及成果評價方式。講解以視覺所感受的結果學習做有型的服裝創意設計的方法。

802009 Fashion Design

2 R Hsueh Chin Ko、F

Learn the analytical method and reading method of the present popular trend, receive

instruction on the use of colorful cloth to make nuance, color adjustment, and pattern design practice method, and learn the method and result of guiding the design evaluation method with different materials. Explain in detail the result learning and the envisioned clothing creativity through the design method.

802010 服裝設計實習

1 必 柯雪琴、上

配合服裝設計理論課程，做流行動向分析報告的實習、布料配色計畫實習、各種素材的組合創意服裝設計實習及主題引導式服裝創意設計的實習，實際練習服裝設計技能與表達能力。

802010 Practice in Fashion Design I

1 R Hsueh Chin Ko、F

Put the costume design theories in the curriculum into practice, such as analysis of fashion trends, matching colors of the cloth, combinations of creative fashion designs with various materials, and theme-based designs. Actual practices will help improve designing skills and the ability to express.

802011 消費者行為學

3 必 徐秀如、上

了解消費者和家庭單位如何作購買決策，及為何不同的獨立個體/團體作不同的購買決策。以行為及心理理論概念應用在個人(個性、知識、動機、涉入、態度、信念和感覺)，次文化(種族、社會階層、家人及家庭單位、團體及個人影響)及文化層次。

802011 Consumer Behavior

3 R Hsiu Ju Hsu、F

Understanding how consumers and households make decisions, and why different individuals/groups make different decisions. The behavioral and psychological science concepts apply at individual (personality, knowledge, motivation, intentions, attitudes, beliefs, and feelings), subcultural (ethnicity, social class, family and household, group and personal influence) and cultural levels.

802012 織品品質鑑定

2 必 賴顯松、下

學習織品品質鑑定的原理、方法和應用。課程內容包括基礎統計、檢驗樣本選擇、實驗設計、檢驗方法、標準與儀器使用、纖維品質鑑定、紗線品質鑑定、織物品質鑑定等。

802012 Textile Goods with Quality

2 R Sang Song Lai、S

Learn quality identification of textile goods in terms of principles, methodology, and application. Course contents include the elements of statistics, test design, the selection of samples for testing, and a method of assay, standard and instrument, fiber quality identification, yarn quality identification, fabric quality identification.

802013 織品品質鑑定實驗

1 必 賴顯松、下

實驗操作布料成份的分析、組織的測定、各種布料物性的測試，增加學生的研判性。課程內容包括織物瑕疵檢驗、染色堅牢度檢驗、纖維結構及種類鑑定、紗線結構與性質檢驗。

802013 Lab of Textile Goods with

1 R Sang Song Lai、S

Test validation on quality identification of textile goods in organization measurement and property of material. Course contents include the woven fabric defects, color fastness, fiber structure, type quality, and yarn structure and properties.

802014 服裝構成學 I

2 必 柯雪琴、下

認識服裝的種類與學習人體構造、人體計測項目、人體體型分析、人體形態的變化以及因動作所引起體型變化時之適宜人體的服飾，另外包括婦女服裝原型之製圖概念、縫製的原理和素材性能等之講授。

802014 Clothing Construction

2 R Hsueh Chin Ko、S

This course has practical purpose. It consists of human body structure, measurement item, changes of human body structure, the appropriated clothing due to changes of human body structure with actions, prototype of clothes, sewing principle, texture properties, etc. In addition to clothing construction, the map construction on prototype production will be taught in the classroom.

802015 服裝構成學實習 I

1 必 柯雪琴、下

依學生之程度不同分成兩班實習，在初級班以平車之使用練習基本縫及手縫，婦女服裝原型，和部分縫之練習，再實際製圖裙子製作成品。在進階班則加強各種裙子、襯衫、褲子、夾克之打版製作以及服裝構成原理之練習。

802015 Practice of Clothing

1 R Hsueh Chin Ko、S

According to the levels of students, this course consists of two stages. In the primary stage, the practice of techniques of clothing construction such as body measurement and flat pattern will be emphasized and carried out on skirt-making. In the advanced stage, principles on pattern-making and clothing construction practices will be carried out on various skirts, shirts, pants and jackets.

802016 服飾商品企劃

3 必 徐秀如、下

以認知整個服裝產業流程為學習出發點，學習以如何運用評估模式做企劃執行前評價，指導產業界目前執行的商品企劃模式，並與業界廠商直接做產學合作讓學生學習業界現場的企劃方法與企劃條件。

802016 Fashion Merchandising

3 R Hsiu Ju Hsu、S

To understand the entire clothing industry process as the starting point of study, learn how to utilize the model of evaluation to evaluate before implementation of the scheme, to guide the merchandizing model that is currently implemented by industry field, and engage in industry-school collaboration directly with the industry field to allow students to learn schematic method and schematic condition at industrial scenes.

802017 實務實習

2 R 待聘、上

給予學生在他們所興趣的服飾領域範圍能實際的在業界有實習的機會，以增加專業的經驗。實習處所包括紡織公司、成衣公司、百貨公司、服飾商品店及飾領相關業界。

802017 Internship in Fashion Design and Management

2 R TBA、F

To offer students the opportunity at work in established internship settings to gain professional experience in their areas of study. Internship place include textiles companies, ready-made clothes companies, general merchandise companies, and apparel commodities stores.

802018 護膚學

3 必 待聘、上

此課程為教導學生瞭解護膚學的專業知識與技能，課程內容包含：皮膚的諮詢與分析、保養品之選購原則、敷面劑的使用、專業護膚儀器的操作與應用、臉部的按摩手技、手、足的保健。使學生獲得美膚專業知識與技能。

802018 Skin Care and Beauty Therapy

3 R TBA、S

This course is designed to assist students in understanding the knowledge and new skills about skincare and beauty therapy. Client consultation, skin analysis, purchasing principles of beauty products, principles and treatment of exfoliation, facial mask therapy in facial treatments, facial treatment with the aid of machines, professional massage skills are all included.

802019 護膚學實習

1 必 待聘、上

此課程為教導學生瞭解護膚學的專業知識與技能，課程內容包含：皮膚的諮詢與分析、保養品之選購原則、敷面劑的使用、專業護膚儀器的操作與應用、臉部的按摩手技、手足的保健。使學生獲得美膚專業知識與技能。

802019 Practice of Skin Care and Beauty Therapy

1 R TBA、S

This course is designed to assist students in understanding the knowledge and new skills about skincare and beauty therapy. Client consultation, skin analysis, purchasing principles of beauty products, principles and treatment of exfoliation, facial mask therapy in facial treatments, facial treatment with the aid of machines, professional massage skills are all included.

802020 彩妝設計

1 必 待聘、下

教導學生選購彩妝品前，先對化妝品及肌膚需有基本概念。課程涵蓋：瞭解自身肌膚問題、護膚守則、身體保養計畫、循序漸進的彩裝課程、彩妝藝廊、彩妝調色盤彩妝配色原則、明度在彩妝的重要性、正式場合的彩妝學、創意彩妝、舞台裝、色彩與燈光的關係、整體造型等彩妝設計課程。

802020 Makeup Design

1 R TBA、S

This course aims to teach students the meaning and purpose of makeup, the basic concepts required for applying cosmetics to the skin, and the theories and practices of makeup design. The course covers the following topics: understanding of one's own skin problems, skincare guidelines, body care, step-by-step makeup application, color mixing, color matching principles, makeup for all occasions, creative makeup, stage costume, the relationship between color and light, and overall style design.

802021 彩妝設計實習

2 必 待聘、下

教導學生選購彩妝品前，先對化妝品及肌膚需有基本概念。課程涵蓋：瞭解自身肌膚問題、護膚守則、身體保養計畫、循序漸進的彩裝課程、彩妝藝廊、彩妝調色盤彩妝配色原則、明度在彩妝的重要性、正式場合的彩妝學、創意彩妝、舞台裝、色彩與燈光的關係、整體造型等彩妝設計課程。

802021 Practice of Makeup Design

2 R TBA、S

This course aims to teach students the meaning and purpose of makeup, the basic concepts required for applying cosmetics to the skin, and the theories and practices of makeup design. The course covers the following topics: understanding of one's own skin problems, skincare guidelines, body care, step-by-step makeup application, color mixing, color matching principles, makeup for all occasions, creative makeup, stage costume, the relationship between color and light, and overall style design.

802022 化妝品學

3 必 待聘、上

本課程在教導學生了解各種化妝品原料的功能及特性，以及介紹當今社會流行化妝品的發展趨勢。課程內容包括：皮膚結構認識、界面活性劑、防腐劑、防曬成分、美白成分、保濕成分、抗老化成分等等常用原料介紹，以建立學生對化妝品的基本概念。

802022 Cosmetology

3 R TBA、F

This course is designed to assist students in understanding the knowledge on Cosmetic functions and specialty. The course offers an introduction to contemporary development of cosmetics technology. The course includes: skin structure, surfactants, preservatives, sunscreen agent, bleaching agent, moisturizer, anti-aging components, etc.

802023 美容學

2 必 待聘、下

美容學主要教導學生何謂美的定義，美容的定義不是發現美，認識美、模仿美，進而創造美。而是在原有天然的面貌上，施用各種不違反人體生理機能的美容方法，加以改善使之達到更趨完美的境界，並傳授美容的目的、如何學習正確的美容法、保養製品的認識及要領、化妝與色彩等..課程。

802023 Facial

2 R TBA、S

The primary objective of this course is to teach students the definition of beauty. The purpose of cosmetology is not to discover, understand, imitate, and eventually create beauty, but to use various beauty methods, without violating the human physiology, to achieve perfection by enhancing the natural features. The course also teaches goals of cosmetology, correct beautification methods, skincare products, makeup and color, etc.

802024 美容學實習

1 必 待聘、下

美容學主要教導學生何謂美的定義，美容的定義不是發現美，認識美、模仿美，進而創造美。而是在原有天然的面貌上，施用各種不違反人體生理機能的美容方法，加以改善使之達到更趨完美的境界，並傳授美容的目的、如何學習正確的美容法、保養製品的認識及要領、化妝與色彩等..課程。

802024 Cosmetology Practice

1 R TBA、S

The primary objective of this course is to teach students the definition of beauty. The purpose of cosmetology is not to discover, understand, imitate, and eventually create beauty, but to use various beauty methods, without violating the human physiology, to achieve perfection by enhancing the natural features. The course also teaches goals of cosmetology, correct beautification methods, skincare products, makeup and color, etc.

802025 創意染色設計與應用

2 必 葉曾欽、上

講授各種織品與染料之特性，染色用水、各種染色用之助劑、染料與纖維染色之理論，以及各種織品之精練、漂白與創意染色加工法、染色堅牢度之應用，織品之創意印花設計等。

802025 Dyeing of Textile Goods

2 R Tseng-Chin Yeh、F

The course emphasizes on the characteristics of textile and dyestuffs. The aim of the module is to explore the essential theories of scouring, bleaching, dyeing, color fastness of watering, medicine mixing, theory of dyeing and a variety of dyeing techniques and printing of textile.

802026 創意染色設計與應用實習

1 必 葉曾欽、上

學習及熟練各種織品（棉、麻、螺縲、羊毛、聚酯、尼龍等）之精練、漂白加工實驗，各種織品之浸染及壓染創意染色加工實習、染色堅牢度之應用試驗，織品之創意印花設計等。

802026 Lab of Innovative Dyeing of Textile Goods

1 R Tseng-Chin Yeh、F

This course takes practices and experiments on various mechanisms, including dip dyeing,

pad dyeing, scouring, bleaching, dyeing of cotton and nylon fiber, printing, colorimetry, color testing, and the level of robustness test.

802027 流行產業研究法

3 必 徐秀如、上

課程提供學生有演練有關服飾市場調查之問題形成、問題確定、操作定義、研究設計、研究方法、問卷設計、資料蒐集及分析的經驗。行為研究的哲理及方法包括實驗法設計和進階研究技巧的評估，是課程所包含的部分之一。

802027 Fashion Apparel Market Research

3 R Hsiu Ju Hsu、R

This study provides the student with practical experience in research process of problem identification, problem definition, alternative identification, research design, methodology, questionnaire design, data collection and analysis in the apparel marketing. Philosophy and methods of behavioral research including experimental design and advanced evaluation research techniques are part of this study.

一、二、選修科目

二、2. Elective Courses

802028 服飾零售學

3 選 徐秀如、下

對於流行零售業的管理，尤其加強在策略的計畫、分析和控制。焦點集中在中階及高階的管理決策。對於服飾零售店其商店政策、組織、商店地理位置、店面陳列、配銷、庫存控制、定價和銷售策略深入探討。

802028 Fashion Retailing

3 S Hsiu Ju Hsu、S

This involves the management of fashion retail business with emphasis on strategic planning, analyses, and control, and focus on middle- and upper-management decisions. Store policies, organization, location, layout, buying, stock control, pricing and sales promotion for apparel retail stores are included in the in-depth investigation.

802029 織品整理學

1 選 葉曾欽、上

講授各種織品之柔軟、絲光、撥水、防水、防皺、防縮、靜電防止、防污(SR)、抗菌、香味加工等整理加工之原理、污垢的附著機構及有關織品洗濯的基礎理論、靜電防止、抗菌防臭、防霉、熨燙加工、去漬、防污、保管、保存的知識。

802029 Finishing of Textile Goods

1 S Tseng-Chin Yeh、F

This course focuses on the fundamental principles of finishing (softness, mercerization, water repellence, waterproof, anti-wrinkle, anti-shrink, soil release and antimicrobial) and Last Phase Processing, Soil Adhesion Mechanics and Theories of Washing, Bleaching, Whitening, Iron, Stain Removal, Safekeeping, Mercerization and Conservation of Textile Goods, Antimicrobial and Antifungal et al.

802030 織品整理學實習

2 選 葉曾欽、上

學習有關各種織品之柔軟、絲光、撥水、防水、防皺、防縮、靜電防止、抗菌防臭、香味加工等整理學的基礎和織品之絲光、柔軟、撥水、防水、防皺、防縮、抗菌(antimicrobial)、靜電防止、防污(Soil Release)、永久免燙、香味加工等加工之實驗操作及功能技巧。

802030 Lab of Finishing

2 S Tseng-Chin Yeh、F

The purpose of the course is to apply laundering and finishing theories learned through the Lab class. Students can deepen and reinforce the concepts of Laundering and Finishing by practicing

and experimenting in the procedures of Bleaching, Mercerization, Shrink Resist Finishing, Permanent Press, Mothproof Finishing, Water Repellence, Water Resistance, Fireproof Finishing, Antimicrobial and Antifungal.

802031 美姿美儀(含實習)

1 選 柯雪琴、上

本課程主要目的為教導學生瞭解站姿、日常動作、走姿、坐姿、手姿及個人應對禮儀，化妝及整體儀態的技巧，西餐禮節的實習、學習服裝秀的編排演練方法及服裝表演的企劃製作。

802031 Posture

1 S Hsueh Chin Ko、F

The main purpose of this curriculum is to help the student to understand the different postures of standing, acting, walking, sitting, hand gestures and to reply graciously. Learn makeup techniques, overall appearance and demeanor, western meal etiquette, and study fashion show scheduling training methods and performance apparel production planning.

802032 服飾商品學

3 選 王韻、下

首先教導學生從國際進出口、的觀點來看服飾商品，接著從產品的外在屬性商標、條碼、包裝與內在屬性設計、款示、功能性等下去深入介紹。另外將討論服飾商品的上游- 紡織產業中的纖維、布料、平織針織與加工- 與工廠對布料與成衣的檢驗方法標準。

802032 Fashion product

3 S Yun Wang、S

Students learn of apparel product from the global view of import and export business. The bar code system, sizing and fit, apparel functions, textiles, and apparel industry are taught. Detail in textiles industry including fiber, fabric, woven, knit, print, dyeing and finishing.

802033 成衣打版

2 選 柯雪琴、上

本課程講授涵蓋一般設計打版與工業用打版的差異、工業用版子的記號、縫份尺寸的設定、版子放縮尺寸理論、排版策略；原型打版理論、胸褶轉移方法。

802033 Pattern Making

2 S Hsueh Chin Ko、F

This course demonstrates the function to create the original vectored patterns and to input the paper patterns for later alteration and grading by using the professional apparel industrial. Through the marker making, it enables the students to manipulate the material savings for the high apparel productivity.

802034 成衣打版實習

1 選 柯雪琴、上

本課程主要讓學生學習一般設計打版與工業用打版的差異、設定工業用版子的記號、縫份尺寸的設定練習、設定版子放縮尺寸、排版、原型打版理論、胸褶轉移方法。

802034 Practice of Pattern Making

1 S Hsueh Chin Ko、F

This course demonstrates the function to create the original vectored patterns and to input the paper patterns for later alteration and grading by using the professional apparel industrial. Through the marker making, it enables the students to manipulate the material savings for the high apparel productivity.

802035 品牌經營管理

3 選 徐秀如、上

探討國內外服裝品牌特色，學習代理品牌的經營管理企劃，預測品牌經營管理的風險處理，及自創品牌經營管理策略，學習製作品牌經營管理時間計劃表等。

802035 Branding Management

3 S Hsiu Ju Hsu、S

Discuss special features on domestic and international clothing brands, learn the

management of being a brand agent, predict risks in brand management, and management from self-created brands. In this course students will learn to use time sheets for branding management.

802036 高科技織品研發

2 選 葉曾欽、下

講授高科技織品之研發程序及新機能性、功能性織品的介紹。課程內容包括功能性纖維、生醫環保用織品、運動保健用織品、安全防護與交通用織品、遠紅外線蓄熱保溫織品、抗紫外線織品、智慧型織品等的特性。

802036 Development of High Technology Textile

2 S Tseng-Chin Yeh、S

This is the study of development of high technology textile and function man-made fibers introduction. Course contents include the function fiber, new synthetic fiber, environmental-friendly fiber, sports use fiber, safety and transportation use fiber, far-infrared heat insulation fiber, anti-UV fiber, and intelligent fiber.

802037 高科技織品研發實習

1選 葉曾欽、下

本課程旨在進行高科技織品研發過程之定量、定性鑑別，以及物化性實驗。課程內容包括織品之抗紫外線性能、織品之遠紅外線蓄熱保性能、織物之透濕防水性能、織物之防電磁波性能及各種織品機能性實驗等。

802037 Practice of Development of High Technology Textile 1 S Tseng-Chin Yeh、S

The course is the introduction of qualitative and quantitative analysis of the development high technology textile and function man-made fibers. Course contents include studying the UV-cut function fibers, fabrics of the far-infrared heat storage security performance, waterproof breathable fabrics on the performance of anti-electromagnetic properties of fabrics, new synthetic fibers, environmental-friendly fibers, and staple fibers for non-woven.

802038 電腦輔助設計

2 選 蔡宜錦、下

操作使用電腦輔助設計工具(CAD)，以進行服飾等相關設計的基礎知識。本課程內容主要為電腦輔助之設計與繪圖功能介紹和運用方式(CADD)，共包含 12 個學習單元。教學內容主要包括：(1)電腦繪圖介紹和電腦輔助設計或草圖製作；電腦輔助軟體、工具系統的操作與個人電腦的聯結使用和 Epson 印表機的輸出；一般操作步驟和主要 CADD 作用；教導課程內容的操作和主工具箱的應用；CADD 作用—功能，文件處理，編輯，輸入與輸出方法，以及提供 3D 立體構圖方法等。每個學習單元的教育目的之說明和可開發能力的介紹，包含例證說明、繪圖講解等，以及一些透明度的使用解說。教學內容也包含被推薦方法的介紹、功能清單內容、參考資料、分組活動和關鍵問題建議的方法說明等。

802038 Computer-Aided-Design in Apparel

2 S I-Chin Tsai、S

Basic knowledge of the use of Computer-Aided-Design (CAD) in fashion apparel designing. This instructional manual contains 12 learning activity packets for use in a workshop in computer-aided design and drafting (CADD). The lessons cover the following topics: introduction to computer graphics and computer-aided design/drafting; coordinate systems; advance space graphics hardware configuration and basic features of the PC microcomputer and the Epson printer; general operating procedures and the major CADD functions; tutorial lesson and the main menu; CADD functions--transformation, file handling, editing, input methods, output methods; and dimensioning and documenting. Each learning activity packet lists prerequisites, purpose, and competencies to be developed and contains information sheets and illustrations, some of which can be used for transparencies. The lecturer's guide also contains a suggested method of introducing the lessons, a checklist, references, group activities, and problem keys.

802039 電腦輔助設計實習

1 選 蔡宜錦、下

操作使用電腦輔助設計工具(CAD)，以進行服飾等相關設計的基礎知識。本課程內容主要為電腦輔助之設計與繪圖功能介紹和運用方式(CADD)，共包含 12 個學習單元。教學內容主要包括：(1)電腦繪圖介紹和電腦輔助設計或草圖製作；電腦輔助軟體、工具系統的操作與個人電腦的聯結使用和 Epson 印表機的輸出；一般操作步驟和主要 CADD 作用；教導課程內容的操作和主工具箱的應用；CADD 作用—功能，文件處理，編輯，輸入與輸出方法，以及提供 3D 立體構圖方法等。每個學習單元的教育目的之說明和可開發能力的介紹，包含例證說明、繪圖講解等，以及一些透明度的使用解說。教學內容也包含被推薦方法的介紹、功能清單內容、參考資料、分組活動和關鍵問題建議的方法說明等。

802039 Practice of Computer-Aided-Design in Apparel

3 S I-Chin Tsai、S

Basic knowledge of the use of Computer-Aided-Design (CAD) in fashion apparel designing. This instructional manual contains 12 learning activity packets for use in a workshop in computer-aided design and drafting (CADD). The lessons cover the following topics: introduction to computer graphics and computer-aided design/drafting; coordinate systems; advance space graphics hardware configuration and basic features of the PC microcomputer and the Epson printer; general operating procedures and the major CADD functions; tutorial lesson and the main menu; CADD functions--transformation, file handling, editing, input methods, output methods; and dimensioning and documenting. Each learning activity packet lists prerequisites, purpose, and competencies to be developed and contains information sheets and illustrations, some of which could be used for transparencies. The lecturer's guide also contains a suggested method of introducing the lessons, a checklist, references, group activities, and problem keys.

802040 服裝構成學 II

2 選 柯雪琴、下

結合服構成學 I 的基礎，講解新文化式原型的基本結構理論，依服裝種類學習打版方法及完成後的樣式認知，學習一般成衣生產流程及縫製管理方式與精品服飾的構成條件及構成方法。

802040 Clothing Construction II

2 S Hsueh Chin Ko、S

Combine the foundation of Clothing Construction I to explain the basic structure theory of the new cultural type prototype, study the method of pattern making and style cognition after completing in accordance with clothing category and learn general clothing production process and stitching management, constitution condition and constitution method of exquisite clothing.

802041 服裝構成學實習 II

1 選 柯雪琴、下

結合服構成學 II 理論基礎，前半段分組練習設計製作高級套裝(設計、選購材料、打版、管理流程、製作流程、成品呈現)，後半段練習設計製作中高年服裝(設計、選購材料、打版、管理流程、製作流程、成品呈現)。

802041 Practice of Clothing

1 S Hsueh Chin Ko、S

Combine the theoretical foundation of Clothing Construction II, former section to practice in group to make deluxe suits (design, selection of materials, pattern making, management process, production process, finished product presentation), and latter section to practice design of making clothing for the middle-aged and seniors (design, selection of materials, pattern making, management process, production process, finished product presentation).

802042 電腦輔助成衣設計打版

2

選 柯雪琴、上

運用法國力克系統專業成衣打板與馬克軟體，示範電腦讀版與裁片的製作、修改和放縮等功能。再經由成衣檔的建立，教導電腦馬克排版的製作、用料預估和繪圖機操作等功能。授課時，可依教學單元主題，搭配台灣內外銷服裝公司打版實例講解，以達理論與實例配合的目標。

802042 Computer-Aided-Design in 2 S Hsueh Chin Ko、F

This course demonstrates the function to create the original vectored patterns and to input the paper patterns into the computer for later alteration and grading by using the professional apparel industrial CAD/CAM software from the Lectra System. Through the marker making software, it enables the students to manipulate the material savings for the high apparel productivity. Also, the lectures compile the cases from the Lectra's customers during the class practice to give the students a better understanding on the apparel industry in Taiwan.

802043 電腦輔助成衣設計打版實習 1 選 柯雪琴、上

運用法國力克系統專業成衣打板與馬克軟體，使學生學習電腦讀版與裁片的製作、修改和放縮等功能。再經由成衣檔的建立，使學生學習電腦馬克排版的製作、用料預估和繪圖機操作等功能。

802043 Practice of Computer-Aided-Design in 1 S Hsueh Chin Ko、F

This course instructs the students to have the ability to create the original vectored patterns and to input the paper patterns into the computer for later alteration and grading by using the professional apparel industrial CAD/CAM software from the Lectra System. Through the marker making software, it enables the students to manipulate the material savings for the high apparel productivity.

802044 服飾電子商務與資訊管理 2 選 徐秀如、上

了解不同的服飾管理階層在行銷資訊系統所扮演的不同角色及服飾電子商務系統如何來支援服飾行業。課程包括;不同型態及層次的行銷決策;行銷資訊系統主要元件知識;對企業常被忽略且沒利用的內部資源;以及了解服飾電子商務系統的分析模型的本質。

802044 E-commerce in Apparel Business 2 S Hsiu Ju Hsu、F

An understanding of the different roles managers play and how marketing information systems of apparel business can support them in these roles, this study includes an appreciation of the different types and levels of marketing decision making, a knowledge of the major components of a E-commerce in Apparel Business, an awareness of the often under-utilized internal sources of information available to enterprises, and an understanding of the nature of analytical models within E-commerce in Apparel Business.

802045 服飾電子商務與資訊管理實習 1 選 王韻、上

利用 POS 系統及企業對消費者的網頁設計來練習了解資訊系統適合的角色，系統從事人員必須探討服裝經理管理階層作什麼及什麼資訊他們需要來作決策決定。同時也練習應用以電腦軟體來解決服飾產業的問題，尤其在研發、設計及執行事業的資訊管理方面。

802045 Practice of E-commerce in Apparel Business 1 S Yun Wang、F

Using POS and B2C web page design to practice in order to understand the proper role of information systems one must examine what clothing managers do and what information they need for decision making. Also, practice in application of information system of apparel business on computers to solve apparel business problems, with an emphasis on the design, development, and implementation of E-commerce system.

802046 流行素材開發與應用 2 選 蔡宜錦、下

本課程的目的在指導學生能以專業的能力創造出流行服飾所需的服裝布料，承如能成

立家庭織品設計的專家。主要重點在織品設計以及織品的製造技術和處理。

802046 Development and Application of Fashion Materials

2 S I-Chin Tsai、S

The course is aimed at training professionals in the textile as well as garment with in-depth knowledge to relate the technological requirements of fabrics in apparel as well as home textile industry. The focus is on textile design and textile manufacturing and processing.

802047 流行素材開發與應用實習

1 選 賴顯松、下

本課程旨在進行服飾流行素材之定量、定性鑑別，以及物理及化學性實驗。課程內容包括實驗概論、纖維結構與品質、紗結構性能、織物結構性能、抗張強度實驗及纖維化學特性等。

802047 Practice of Developing Fashion Materials

1 S Sang Song Lai、S

This involves practices of quantitative and qualitative materials validation on properties of function clothing material in terms of physics and chemistry. Course contents include the introduction to testing, fiber structure and quality, yarn structure, fabric structure and properties, the tensile testing of textiles and fiber chemical properties.

802048 立體裁剪

2 選 蔡宜錦、上

服裝設計的達成是根據利用對織品進行處理的操作手法，直接在人台上（身體形式）進行，其設計關鍵在於掌握織品、服裝設計樣貌和人台（身體形式）的間的掌握。課程目的：(1) 服裝立體裁剪的原理(紋理、鬆份、平衡、切線)。(2) 直接在人台上巧妙地處理織品以創造欲想的設計效果。(3) 辨認平面織品和在 3D 立體身體上的服裝兩者間的差異。(4) 說明如何令人滿意地針對特定身材，達成服裝立體裁剪的合身性與製作的原則。(5) 瞭解使用服裝立體裁剪完成服裝設計的好處和缺點。(6) 透過服裝立體裁剪，以增加在服裝上產生獨創性設計的興趣，並借助於各種各樣靈感來源的啟發。

802048 Garment Draping

2 S I-Chin Tsai、F

Garment design based on manipulation of fabric on a body form; emphasis on the interrelationships among fabric, garment design, and the human form. The objectives of the course:

1. To apply the principles of garment draping (grain, ease, balance, line) using a body form.
2. To manipulate fabrics to create desired effects on a body form.
3. To identify the relationship between fabric and the 3-dimensional appearance of the garment on the body.
4. To apply the principles of fit and draping to produce a garment to satisfactorily fits a specific body.
5. To understand the advantages and disadvantages of using draping techniques for garment design.
6. To increase interest in originality and creativity in apparel design, using a variety of sources of inspiration.

802049 立體剪裁實習

1 選 蔡宜錦、上

服裝設計的達成是根據利用對織品進行處理的操作手法，直接在人台上（身體形式）進行，其設計關鍵在於掌握織品、服裝設計樣貌和人台（身體形式）的間的掌握。課程目的：(1) 服裝立體裁剪的原理(紋理、鬆份、平衡、切線)。(2) 直接在人台上巧妙地處理織品以創造欲想的設計效果。(3) 辨認平面織品和在 3D 立體身體上的服裝兩者間的差異。(4) 說明如何令人滿意地針對特定身材，達成服裝立體裁剪的合身性與製作的原則。(5) 瞭解使用服裝立體裁剪完成服裝設計的好處和缺點。(6) 透過服裝立體裁剪，以增加在服裝上產生

獨創性設計的興趣，並借助於各種各樣靈感來源的啟發。

802049 Practice of Garment Draping

1 S I-Chin Tsai、F

Garment design based on manipulation of fabric on a body form; emphasis on the interrelationships between fabric, garment design, and the human form. The objectives of the course:

1. To apply the principles of garment draping (grain, ease, balance, line) using a body form.
2. To manipulate fabrics to create desired effects on a body form.
3. To identify the relationship between fabric and the 3-dimensional appearance of the garment on the body.
4. To apply the principles of fit and draping to produce a garment to satisfactorily fits a specific body.
5. To understand the advantages and disadvantages of using draping techniques for garment design.
6. To increase interest in originality and creativity in apparel design, using a variety of sources of inspiration.

802050 時尚採購學

3 選 王韻、下

提供潛在服飾零售業者能有基本知識且在基於滿足消費者及維持一定利潤水準的前提下，作採購及企劃商品的決策。同時了解服飾採購員的責任含跨至服飾產品陳列於店面所進行的過程。服飾採購員必須與設計師溝通以確定他們的品牌符合時下的最流行的趨勢，能與販賣商洽商成本，與打版設計師合作，以確定服裝適合消費者的喜愛及確定販售商能在期限內送達貨物。

802050 Fashion Buying

3 S Yun Wang、S

Gives potential retailers the knowledge base to make decisions on buying and merchandising to satisfy customers and maintain an adequate profit level. Understanding of a fashion buyer (merchandiser) is essential for the process that allows the final clothing line to appear in a store. Buyers work with designers to ensure that their brand will represent the most recent trends, negotiate costs with vendors, work with technical designers to ensure the garment fits the customer perfectly, and make sure the vendors meet the delivery deadline.

802051 整體造型設計

3 選 待聘、下

培養學生具備時尚造型設計的知識及技能，個性化創作設計的能力，並具備掌握流行的敏感度，熟練各種化妝造型與服裝顧問的技巧，以培養整體造型專業人才。

802051 Overall Shape Design

3 S TBA、S

This course trains students to have the knowledge for fashion styling and design, as well as sensitivity to fashion trends and the skills to create individualistic designs. The course trains students with various makeup skills and wardrobe consultant skills in order to become a top professional fashion stylist.

802052 整體造型設計實習

2 選 待聘、下

培養學生具備時尚造型設計的知識及技能，個性化創作設計的能力，並具備掌握流行的敏感度，熟練各種化妝造型與服裝顧問的技巧，以培養整體造型專業人才。

802052 Practice of Overall Shape Design

2 S TBA、S

This course trains students to have the knowledge for fashion styling and design, as well as sensitivity to fashion trends and the skills to create individualistic designs. The course trains students with various makeup skills and wardrobe consultant skills in order to become a top

professional fashion stylist.

802053 時尚美學

3 選 蔡宜錦、上

美學作為一種學問，旨在探尋有關美與藝術的知識，就像所有其它的學問一樣，也有其獨特的方法。本課程首先針對美學加以闡述藝術、科學與倫理三者間的知識內容，進而指出科學真理中所隱含的藝術特質。其次探討傳統美學與當代美學家的不同觀點，以及其存在的意義與價值。

802053 Fashion Aesthetics

3 S I-Chin Tsai、F

The study of aesthetics is to discover all knowledge regarding beauty and art. Like any other study, aesthetics has its own learning methods. The course will look at art, science, and ethics and how art exists in science. Then the course will discuss the different perceptions on traditional aesthetics and contemporary aesthetics, as well as the significance and value of its existence.

802054 時尚設計史

2 選 蔡宜錦、下

本課程主要在探討從古代文化的時尚樣式到法國誕生女裝高級訂製服的時尚演變內容。本課程通過文化和歷史的介紹，提供回顧時尚樣式的週期本質，以及其本身視覺語言的意涵。從本課程中經過時尚歷史的回顧、以及其過去的影響，藉以反映在當代的時尚設計，以致創造一番新審美型態的時尚業表現。

802054 History of Fashion

2 S I-Chin Tsai、F

The course highlights key moments in the history of fashion and the evolution of the silhouette from the ancient civilization style to the birth of haute couture. This course will provide a visual language of fashion reviewing the cyclical nature of styles through a solid grounding in cultural and historical studies. The course aims to reflect upon the influence of the past upon contemporary fashion design. The recycling of styles is a phenomenon of the fashion industry, referring to the past to create a new aesthetic.

802055 時尚促銷學

3 選 王韻、下

教導學生在全球市場下，廣告促銷對流行產品的意義，以及對消費者、行銷市場所造成的影響。瞭解實上促銷學包含：促銷活動、公共關係、服裝秀、人員銷售、櫥窗佈置、廣告等等內容。

802055 Fashion Promotion

3 S Yun Wang、S

Impart the significance of product advertising promotion in global markets and its effects on consumers and marketing segments. Students are expected to learn about Fashion Promotion including, promotional activities, public relations, fashion shows, sales personnel, window display, advertising, etc.

802056 布料設計

1 選 賴顯松、上

說明梭織物與編織物之種類、構成原理、組織圖的意義、設計應用與編織技法，並講授織物之整理加工、各種織物之特性與分析。

802056 Fabric Design

2 S Chin ChiuWei、S

This course will describe the woven fabric and knitted fabric work and construction principle. This course provides a critical appreciation of the technological developments and scientific understanding related to clothing appearance and fitting. It bridges recent active research and development in a number of different areas including fashion aesthetics, garment appearance, measurement technology, fabric objective measurement, garment drape,

computer-aided design, human anthropometrics and sizing. It will be of great interest to all those concerned with appearance and fit in the garment industry and for textile and fashion students and researchers.

This course covers

802057 布料設計實習

2 選 賴顯松、上

實際利用梭織機、織帶機、綴織機以及生活週遭隨手可得之素材作為織物編織之工具，並自行製作編織用具編織製作編織物，以及實際分析與觀察各種織物之組織與特性。

802057 Practice of Textiles

2 S Chin ChiuWei、S

This course will utilize inkle weaving loom, and tapestry and knitting machine. The materials for this course will be taken from the surrounding environment. The students will be asked to observe different kinds of fiber textiles and make analyses of features of weavings. This practice course will make a real product with Dobby Loom.

802058 流行飾品設計實習

2 選 蔡宜錦、下

學習各種流行裝飾物件的製作原理、方法與設計理念、廣泛地應用於流行款式上。並實際操作各種裝飾物件的製作方式，爾後製作成成品，推廣應用於流行產品上。

802058 Practice of Fashion Accessory

3 S I-Chin Tsai、S

Learn the production principles, methods, and design concepts of a variety of fashion accessories and apply them in designing fashion styles. Engage in hands-on productions and apply the skills in fashion product making.

802059 彩繪化妝

2 選 待聘、上

彩繪化妝主要是教導學生彩繪化妝的專業知識與技能，課程內容包含：人體彩繪的專業知能及技能、人體彩繪顏彩品的歷史與應用、花飾化妝、國劇化妝、人體彩繪的專業技巧及方法等、專業人體彩繪造型設計技巧。

802059 Body Painting

2 S TBA、F

This course is designed for students to acquire knowledge and skill on body painting. The course content covers: body painting knowledge and skills, body painting cosmetic history and application, flower make-up, Chinese opera make-up, body painting techniques, professional body painting styling skills, etc.

802060 彩繪化妝實習

1 選 待聘、上

此課程內容包含彩繪顏彩品的應用、花飾化妝、國劇化妝、人體彩繪的專業技巧及方法等、專業人體彩繪造型設計技巧等。

802060 Practice of Body Painting

1 S TBA、F

This course covers body painting cosmetics, flower make-up, Chinese opera make-up, body painting techniques, professional body painting styling skills, etc.

802061 服務業行銷

3 選 王韻、下

首先了解服務的特色，並加入全球的觀點。接著從行銷的角度深入探究，包含溝通策略、服務品質、市場區隔、顧客導向、實體環境設計、人員銷售等內容。

802061 Service Marketing

3 S Yun Wang、S

The course is to understand service characteristics on a global scale. The course will then from marketing's point of view discuss communication, service quality, market segmentation, customer guidance, environmental designs, sales and more.

802062 文化創意設計與應用

2 選 賴顯松、上

本課程分成兩大單元，第一單元介紹中國地區。各民族服裝文化，含顏色和彩繡的圖騰、山水、花草及樹木，展現出中國民族服裝的藝術。第二單元介紹台灣地區客家和原住民族衣飾文化的五光十色，艷麗多彩藝術。教導學生瞭解文化創意設計的專業知識與技能，課程內容包含：文化、文化資產、文化產業、文化創意產業等。使學生獲得文化創意設計專業知識與技能。

802062 Folk Costume

2 S Sang Song Lai 、S

This course consists of two units: the first unit covers an introduction of China (i.e. cultures, colors, totems, landscapes, flowers, grass, and trees that illustrate the beauty of costume art for Chinese peoples). The second unit covers an introduction of Taiwan (i.e. culture of Clothing among Taiwan Aborigines and Hakka). This course is designed to acquire knowledge and professional skills related to cultural creative design. The course content covers: culture, cultural heritage, cultural industry, cultural creativity industry, etc.

802063 文化創意設計與應用實習

1 選 賴顯松、上

本課程分成兩大單元，第一單元介紹中國地區。各民族服裝文化，含顏色和彩繡的圖騰、山水、花草及樹木，展現出中國民族服裝的藝術。第二單元介紹台灣地區客家和原住民族衣飾文化的五光十色，艷麗多彩藝術。教導學生瞭解文化創意設計的專業知識與技能，課程內容包含：文化、文化資產、文化產業、文化創意產業等。使學生獲得文化創意設計專業知識與技能。

802063 Practice of Folk Costume

1 S Sang Song Lai 、S

This course consists of two units: the first unit covers an introduction of China (i.e. cultures, colors, totems, landscapes, flowers, grass, and trees that illustrate the beauty of costume art for Chinese peoples). The second unit covers an introduction of Taiwan (i.e. culture of Clothing among Taiwan Aborigines and Hakka). This course is designed to acquire knowledge and professional skills related to cultural creative design. The course content covers: culture, cultural heritage, cultural industry, cultural creativity industry, etc.

802064 美容產業經營

3 選 待聘、下

讓學生了解美容經營與管理的基本理論，幫助學生具備有效經營美容院的能力，培養正確的經營理念、商業道德及服務社會的精神。課程內容包含：經營與管理的界說、經營的基本概念、管理的意義及功能。經營計劃的擬定、經營執照的申請設立、美容院的佈置與裝潢。化妝品推銷商品的知識、美容的知識及技術與販賣的方式。

802064 Beauty Business Management

3 選 待聘、下

Students will learn how to operate beauty business from a consumer perspective. This course covers the following topics: concepts of operation and management, ways to operate a beauty saloon, psychological operation, entrepreneurial operation, personnel management, operation and administrative management, and marketing psychology.

802065 顧客關係管理

3 選 王韻、下

瞭解顧客服務與關係管理之現況與趨勢，接著探討顧客滿意衡量與抱怨處理，客服管理系統技術，銷售自動化，資料倉儲，以及 CRM 實例分析與探討。

802065 Customer Relationship Management

3 S Yun Wang 、S

Understand the current situation and trend of customer service and relationship management,

customer satisfaction measurement, customer complaint handling, technology of CRM system, Sales Force Automation, and data mining. Case analysis and discussion of CRM are also included.

熱帶農業暨國際合作系

教育目標

1. 培育熱帶農業及國際農業基礎專業人才。
2. 傳承農業技能和永續經營的生態環境。
3. 促進農、林、漁、牧專業技術的發展。

植物生產組畢業學分總表 (Plant Production Group)

必修科目總稱 Names of Courses in Chinese and English	學分數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester							
校定共同必修科目(I) Common courses required by university	30	5	7	5	5	4	4	0	0	本國生 外籍生 畢業學分 Credits counted toward graduation
	36	7	7	6	6	4	2	2	2	
專業共同必修科目 Common courses required for specialty	16	7	2	3	0	2	0	1	1	農學院(II) Credits required by college
	23	2	3	3	3	3	0	6	3	系定(III) Credits required by department
植物生產組專業必修科目 Courses required for group specializing in plant production	32	4	6	3	7	3	4	5	0	系組定(IV)
植物生產組專業選修科目 Elective courses required for group specializing in Plant Production	29	0	0	2	2	4	7	3	11	本國生 外籍生 植物組 (V)
	23	0	0	0	0	4	8	2	9	
合計 Total	130	18	18	16	17	16	15	15	15	本國生

必修科目總稱 Names of Courses in Chinese and English	學分數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks	
		1st semester	2nd semester								
		20	18	15	16	16	14	16	15		

動物生產組畢業學分總表 (Animal Production Group)

必修科目總稱 Names of Courses in Chinese and English	學分數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks	
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester		
		校定共同必修科目(I) Common courses required by university	30	5	7	5	5	4	4		
	36	7	7	6	6	4	2	2	2	外籍生	
專業共同必修科目 Common courses required for specialty	16	7	2	3	0	2	0	1	1	農學院(II) Credits required by college	
	23	2	3	3	3	3	0	6	3	系定(III) Credits required by department	
動物生產組專業必修科目 Courses required for group specializing in Animal Production	36	0	3	7	4	4	7	7	4	系組定(VI)	
動物生產組專業選修科目 Elective courses	25	0	0	0	3	4	6	3	9	本國生	動物組(VII)

必修科目總稱 Names of Courses in Chinese and English	學分數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester							
		19	0	0	0	2	2	7	1	
合計 Total	130	14	15	18	15	17	17	17	17	本國生
		16	15	19	15	15	16	17	17	外籍生

(I) 校定共同必修科目 (Courses Required by University)

必修科目總稱 Names of Courses in Chinese and English	學分數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester							
外籍生必修 Foreign Students Required Courses										
應用華語 (一) Applied Mandarin (I)	2	2								外籍生必修, 必要時寒暑假開課
應用華語 (二) Applied Mandarin (II)	2		2							
應用華語 (三) Applied Mandarin (III)	2			2						
應用華語 (四) Applied Mandarin (IV)	2				2					
應用華語 (五) Applied Mandarin (V)	2					2				
應用華語 (六) Applied Mandarin (VI)	2						2			
應用華語 (七) Applied Mandarin (VII)	2							2		
台灣歷史、地理與文化 History, Geography and Culture in Taiwan	4	2							2	
本國生必修 Local Students Required Courses										
國文 Chinese	4	2	2							
軍訓 Military Training	0	0	0							
通識教育講座 Lectures on General Education	1			1						每學期畢業前修畢
英語聽講練習 103/104 Oral-Aural Training in English	1				1					(103/104 二選一)
通識課程 General Education	4					2	2			(人文學科、社會科學各2學分)
憲法 Constitution	2						2			

必修科目總稱 Names of Courses in Chinese and English	學分數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester							
英文實務 English Proficiency in Listening & Reading	0							0		開設於大四畢業前修畢
共同必修 Foreign and Local Students Required Courses										
英文(一) English (I)	2	2								
英文(二) English (II)	2		2							
英文(三) English (III)	2			2						
英文(四) English (IV)	2				2					
體育 Physical Education	2	1	1							每週上課 2小時
服務教育 Learning by Service	0	0	0							每週上課 2小時 導師
通識選修課程 Courses of General Education	8		2	2	2	2				人文科學 (Contemporary Leisure and Health Promotion)、 自然與生命科學(Animal and Plant Protection and Agriculture)、 社會科學(Social Science)、 數理與應用科學(Introduction of Geographic Information System and Its Applications)
合計 Total	30	5	7	5	5	4	4	0	0	本國生
	36	7	7	6	6	4	2	2	2	外籍生

(II) 農學院共同必修科目 (Credits Required by College)

必修科目總稱 Names of Courses in Chinese and English	學分數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester							
植物組必修 Plant Group Required Courses										
植物學 Botany	2	2								植物組必修
植物學實習 Botany Lab.	1	1								植物組必修
動物組必修 Animal Group Required Courses										
動物學 Zoology	2	2								動物組必修
動物學實習 Zoology Lab.	1	1								動物組必修
共同必修 Plant and Animal Groups Required Courses										
普通化學 General Chemistry	3	3								
普通化學實驗 General Chemistry Lab.	1	1								每週上課 2小時
電子計算機概論 Computer Science	0		0							每週上課 2小時
生態學 Ecology	2		2							
生物統計 Biometry	2			2						
生物統計實習 Biometry Lab.	1			1						每週上課 2小時
生物技術 Biotechnology	2					2				
實務專題 Special Projects	2							1	1	
合 計 Total	植/動 16	7	2	3	0	2	0	1	1	

(III) 系定專業共同必修科目

(Courses Required for Group Specializing in Plant and Animal Production)

必修科目總稱 Names of Courses in Chinese and English	學分數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	
		國際農業發展 International Agriculture Development	2	2						
有機化學 Organic Chemistry	2		2							
有機化學實驗 Organic Chemistry Lab.	1		1							
生物化學 Biochemistry	2			2						
生物化學實習 Practice of Biochemistry	1			1						
微生物學 Microbiology	2				2					
微生物學實習 Practice of Microbiology	1				1					
遺傳學 Genetics	2					2				
遺傳學實習 Practice of Genetics	1					1				
文獻選讀與寫作 Scientific Reading and Writing	2							2		
農業企業經營管理 Agribusiness Management	3							3		
專題討論 Seminar	2							1	1	
國際經濟暨合作 International Economy and Cooperation	2								2	
合 計 Total	23	2	3	3	3	3	0	6	3	

(IV) 植物生產組專業必修科目

(Courses Required for Group Specializing in Plant Production)

必修科目總稱 Names of Courses in Chinese and English	學分數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	
		農藝園藝概論 Introduction to Agronomy and Horticulture	3	3						
農藝園藝學概論實習 Practice of Introduction to Agronomy and Horticulture	1	1								
作物學 Crop Sciences	3		3							
作物學實習 Practice of Crop Sciences	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						
植物生理學 Plant Physiology	3				3					
植物生理學實驗 Plant Physiology Lab.	1				1					
植物繁殖學 Plant Propagation	2				2					
植物繁殖學實習 Practice of Plant Propagation	1				1					
植物保護學 Plant Protection	2					2				
植物保護學實習 Practice of Plant Protection	1					1				
作物育種學 Crop Breeding	3						3			

必修科目總稱 Names of Courses in Chinese and English	學 分 數 No. Credits	第一學年		第二學年		第三學年		第四學年		備註 Remarks
		1 st Academic Year		2 nd Academic Year		3 rd Academic Year		4 th Academic Year		
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	
作物育種學實習 Practice of Crop Breeding	1						1			
分子生物學 Molecular Biology	2							2		
作物營養學 Crop Nutrition Management and Diagnostic Techniques	2							2		
作物營養學實習 Practice of Crop Nutrition Management and Diagnostic Techniques	1							1		
合 計 Total	30	4	4	3	7	3	4	5	0	

(V) 植物生產組專業選修科目

(Elective Courses Required for Group Specializing in Plant Production)

選修科目總稱 Names of Elective Courses in Chinese and English	學 分 數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	
蔬菜學 Olericulture	2					2				
蔬菜學實習 Practice of Olericulture	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			
林產與木材科學 Forest Products and Wood Science	3			3						
地理資訊系統概論 Introduction of GIS	2				2					
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					
農業經濟 Agricultural Management	2				2					
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				
花卉學 Floriculture	2					2				
花卉學實習 Practice of Floriculture	1					1				
果樹學 Pomology	2						2			

選修科目總稱 Names of Elective Courses in Chinese and English	學 分 數 No. Credits	第一學年		第二學年		第三學年		第四學年		備註 Remarks
		1 st Academic Year		2 nd Academic Year		3 rd Academic Year		4 th Academic Year		
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	
果樹學實習 Practice of Pomology	1						1			
應用農藥學 Pesticide Application	2						2			
設施園藝 Horticultural Production Under Structures	2							2		
設施園藝實習 Practice of Horticultural Production Under Structures	1							1		
雜草管理 Weed Management	2							2		
雜草管理實習 Practice of Weed Management	1							1		
草坪管理 Turf Management	2							2		
草坪管理實習 Practice of Turf Management	1							1		
蘭花學 Orchidology	2							2		
林產概論 Introduction of Forestry Products	3							3		
造園學 Landscape Architecture	2								2	
造園學實習 Practice of Landscape Architecture	1								1	
藥用作物學 Medicinal Crops Science	2								2	
藥用作物學實習 Practice of Medicinal Crops Science	1								1	
食用菌栽培 Cultivation of Edible Fungi	2								2	

選修科目總稱 Names of Elective Courses in Chinese and English	學 分 數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	
食用菌栽培實習 Practice of Cultivation of Edible Fungi	1								1	
行銷學 Marketing	3								3	
合 計 Total	48	0	0	3	7	9	8	14	12	

(VI) 動物生產組專業必修科目

(Courses Required for Group Specializing in Animal Production)

必修科目總稱 Names of Courses in Chinese and English	學分數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester							
動物科技概論 Introduction to Animal Science	3		3							
世界養殖概論 Introduction to World Aquaculture	2			2						
禽畜解剖生理學 Anatomy and Physiology of Domestic Animal	3			3						
禽畜解剖生理學實習 Practice of Anatomy and Physiology of Domestic Animal	1			1						
牧場實務實習 Practice of Livestock Farm	4			1	1	1	1			
禽畜飼育管理 Feeding and Management of Domestic Animal	6					3	3			
動物營養學 Animal Nutrition	3				3					
免疫學概論 General Immunology	3						3			有實習課 Including Practice
水族動物疾病學 Aquatic Animal Diseases	3							3		有實習課 Including Practice
養殖場實習 Aquafarm Practice	2							1	1	
禽畜保健與傳染病防治(一) Livestock Health and Transmissible Diseases (I)	2							2		

必修科目總稱 Names of Courses in Chinese and English	學 分 數 No. Credits	第一學年		第二學年		第三學年		第四學年		備註 Remarks
		1 st Academic Year		2 nd Academic Year		3 rd Academic Year		4 th Academic Year		
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	
禽畜保健與傳染病 防治實習(一) Practice of Livestock Health and Transmissible Diseases (I)	1							1		
禽畜保健與傳染病 防治(二) Livestock Health and Transmissible Diseases (II)	2								2	
禽畜保健與傳染病 防治實習(二) Practice of Livestock Health and Transmissible Diseases (II)	1								1	每週上課 2小時
合 計 Total	36	0	3	7	4	4	7	7	4	

(VII) 動物生產組專業選修科目

(Elective Courses Required for Group Specializing in Animal Production)

選修科目總稱 Names of Elective Courses in Chinese and English	學 分 數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	
		水產生物學 Aquatic Biology	3		3					
家畜環境生理學 Environmental Physiology of Domestic Animal	2			2						
休閒漁業 Recreational Fisheries	2			2						
畜舍策劃與自動化 Animal House Arrangement and Automation	2			2						
家畜育種學 Animal Breeding	2				2					
飼料分析與品管技術 Feed Analysis and Quality Control	2				2					
飼料分析與品管技 術實習 Practice of Feed Analysis and Quality Control	1				1					
水產養殖學 Introduction to Aquaculture	3				3					有實習課 Including Practice
飼料生物學 Cultivation of Live Feed	3				3					有實習課 Including Practice
水產營養飼料學 Fish Nutrition and Feed	3					3				有實習課 Including Practice
海洋生態學 Marine Ecology	3					3				
肉品加工技術 Meat Product Processing	2						2			

選修科目總稱 Names of Elective Courses in Chinese and English	學 分 數 No. Credits	第一學年		第二學年		第三學年		第四學年		備註 Remarks
		1 st Academic Year		2 nd Academic Year		3 rd Academic Year		4 th Academic Year		
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	
肉品加工技術實習 Practice of Meat Product Processing	1						1			
養殖經營與管理 Aquaculture Business Management	2						2			
觀賞魚養殖與管理 Culture and Management of Ornamental Fish	2						2			
觀賞魚養殖與管理 實習 Practice of Culture and Management of Ornamental Fish	1						1			
寵物飼養管理 Pet Feeding and Management	2							2		
乳品加工技術 Dairy Product Processing	2							2		
乳品加工技術實習 Practice of Dairy Product Processing	1							1		
畜產品衛生與管理 Hygiene and Control of Animal Products	2							2		
畜產經營 Livestock Production Management	2							2		
畜產經營實習 Practice of Livestock Production Management	1							1		
動物飼料學 Animal Feeds and Feeding	2							2		
畜產企業管理 Livestock Business Management	2								2	

選修科目總稱 Names of Elective Courses in Chinese and English	學 分 數 No. Credits	第一學年 1 st Academic Year		第二學年 2 nd Academic Year		第三學年 3 rd Academic Year		第四學年 4 th Academic Year		備註 Remarks
		1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	
水產養殖自動化 Aquaculture Automation	2								2	
水產遺傳育種學 Fish Genetics and Breeding	3								3	有實習課 Including Practice
農業經濟 Agricultural Management	2				2					
合 計 Total	55	0	3	6	13	6	8	12	7	
				2						夏良宙
畜產品利用學 Utilization of Animal Products	2						2			林美貞、譚發 瑞
行銷學 Marketing	3								3	

國立屏東科技大學 熱帶農業暨國際合作系 四年制課程規劃表

學年	第一學年				第二學年							
學期	第一學期		第二學期		第一學期		第二學期					
修別	科目	學分	科目	學分	科目	學分	科目	學分				
必 同	共	應用華語(一)--外籍生	2	應用華語(二)--外籍生	2	應用華語(三)--外籍生	2	應用華語(四)--外籍生	2			
		台灣歷史、地理與文化--外籍生	2	國文--本國生	2	通識教育講座--本國生	1	英語聽講練習 103/104--本國生	1			
		國文--本國生	2	軍訓--本國生	0	英文(三)	2	英文(四)	2			
		軍訓--本國生	0	英文(二)	2	通識選修課程	2	通識選修課程	2			
		英文(一)	2	體育	1	生物統計	2	微生物學	2			
		體育	1	服務教育	0	生物統計實習	1	微生物學實習	1			
		服務教育	0	通識選修課程	2	生物化學	2	植物生理學	3			
		普通化學	3	電子計算機概論	0	生物化學實習	1	植物生理學實驗	1			
		普通化學實驗	1	生態學	2	土壤與肥料	2	植物繁殖學	2			
		國際農業發展	2	有機化學	2	土壤與肥料實習	1	植物繁殖學實習	1			
		農園藝概論	3	有機化學實驗	1							
		農藝園藝學概論實習	1	作物學	3							
				作物學實習	1							
	修 組	植	植物學	2	動物學	2						
		物	植物學實習	1	動物學實習	1						
動 物 組				動物科技概論	3	世界養殖概論	2					
						禽畜解剖生理學	3					
						禽畜解剖生理學實習	1					
小 計	植物組/動物組		18/15	植物組/動物組		19/19	植物組/動物組		14/20	植物組/動物組		15/15
選 修	植					林產與木材科學	3	地理資訊系統概論	2			
	物							農園產品處理學	2			
動 物 組								農園產品處理學實習	1			
								農業經濟	2			
				水產生物學	3	家畜環境生理學	2	家畜育種學	2			
						休閒漁業	2	飼料分析與品管技術	2			
						畜舍策劃與自動化	2					

小 計			植物組/動物組	0/7	植物組/動物組	3/6	植物組/動物組	7/4
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國立屏東科技大學 熱帶農業暨國際合作系 四年制課程規劃表

學年		第一學年				第二學年			
學期		第一學期		第二學期		第一學期		第二學期	
修別		科目學分		科目學分		科目學分		科目學分	
必	共								
	同								
修	植物組								
	動物組					牧場實務實習	1	牧場實務實習 動物營養學	1 3
小計						植物組/動物組	0/1	植物組/動物組	0/4
選	植物組								
	動物組							飼料分析與品管技術實習 水產養殖學 飼料生物學 農業經濟	1 3 3 2
小計								植物組/動物組	0/9

國立屏東科技大學 熱帶農業暨國際合作系 四年制課程規劃表

學年	第三學年				第四學年				學分總計	
學期	第一學期		第二學期		第一學期		第二學期			
修別	科目	學分	科目	學分	科目	學分	科目	學分		
必修	共	應用華語(五)--外籍生 通識課程--本國生 通識選修課程 生物技 遺傳學 遺傳學實習 植物保護學 植物保護學實習	2 2 2 2 2 1 2 1	應用華語(六)--外籍生 通識課程--本國生 憲法--本國生 作物育種學 作物育種學實習	2 2 2 3 1	應用華語(七)--外籍生 英文實務 實務專題 文獻選讀與寫作 農業企業經營管理 專題討論 分子生物學 作物營養學 作物營養學實習	2 0 1 2 3 1 2 2 1	台灣歷史、地理與文化--外籍生 實務專題 專題討論 國際經濟暨合作	2 1 1 2	
	同									
	植物組									
	動物組	牧場實務實習	1	牧場實務實習	1	水族動物疾病學	3	養殖場實習	1	
		禽畜飼育管理	3	禽畜飼育管理	3	養殖場實習	1	禽畜保健與傳染病防治(二)	2	
				免疫學概論	3	禽畜保健與傳染病防治(一)	2	禽畜保健與傳染病防治實習(二)	1	
	小計	植物組/動物組	12/16	植物組/動物組	8/15	植物組/動物組	12/19	植物組/動物組	6/10	38/60

選	植	蔬菜學 蔬菜學實習 植物組織培養技術 植物組織培養技術實習 花卉學 花卉學實習	2 1 2 1 2 1	特用作物學 特用作物學實習 果樹學 果樹學實習 應用農藥學	2 1 2 1 2	設施園藝 設施園藝實習 雜草管理 雜草管理實習 草坪管理 草坪管理實習 蘭花學 林產概論	2 1 2 1 2 1 2 3	造園學 造園學實習 藥用作物學 藥用作物學實習 食用菌栽培 食用菌栽培實習 行銷學	2 1 2 1 2 1 3	
	動	水產營養飼料學 海洋生態學	3 3	肉品加工技術 肉品加工技術實習 養殖經營與管理 觀賞魚養殖與管理 觀賞魚養殖與管理實習	2 1 2 2 1	寵物飼養管理 乳品加工技術 乳品加工技術實習 畜產品衛生與管理 畜產經營 畜產經營實習 動物飼料學	2 2 1 2 2 1 2	畜產企業管理 水產養殖自動化 水產遺傳育種學	2 2 3	
修	物									
組										
小計	植物組/動物組	11/6	植物組/動物組	8/8	植物組/動物組	14/12	植物組/動物組	12/7	45/33	

註：1.本系植物組學生至少應修滿 130 學分始得畢業(其中必修應修 130 學分，選修應修 0 學分)

2.本系動物組學生至少應修滿 130 學分始得畢業(其中必修應修 130 學分，選修應修 0 學分)

熱帶農業暨國際合作系

Department of Tropical Agriculture and International Cooperation

課程代號 Course Number	科目名稱(中 文) Course (Chinese)	學分 Credit	科目名稱(英 文) Course (English)	頁次 Page
專業必修科目 Required Courses				
222001	農藝園藝學	3	Introduction to Agronomy and Horticultural Science	
222002	農藝園藝學實習	1	Practice of Agronomy and Horticultural Science	
222003	禽畜解剖生理學	3	Anatomy and Physiology of Domestic Animal	
222004			禽畜解剖生理學實習	1 Practice of Anatomy and Physiology of Domestic Animal
222005	有機化學	2	Organic Chemistry	
222006	有機化學實驗	1	Organic Chemistry Lab.	
222007	土壤與肥料	2	Soil and Fertilizer	
222008	土壤與肥料與實習	1	Practice of Soil and Fertilizer	
222009	植物生理學	3	Plant Physiology	
222010	植物生理學實驗	1	Plant Physiology Lab.	
222011	特用作物學	2	Special Crops Science	
222012	特用作物實習	1	Practice of Special Crops Science	
222013	牧場實務實習	1	Practice of Livestock Farm	
222014	世界養殖概論	2	Introduction to World Aquaculture	
222015	生物化學	2	Biochemistry	
222016	生物化學實習	1	Practice of Biochemistry	
222017	動物營養學	3	Animal Nutrition	
222018	遺傳學	2	Genetics	
222019	遺傳學實習	1	Practice of Genetics	
222020	作物營養學	2	Crop Nutrition Management and Diagnostic Techniques	
222021	作物營養學實習	1	Practice of Crop Nutrition Management and Diagnostic Techniques	
222022	水族動物疾病學	3	Aquatic Animal Diseases	
222023	專題討論	1	Seminar	
222024	作物育種學	3	Crop Breeding	
222025	作物育種學實習	1	Practice of Crop Breeding	
222026	禽畜保健與傳染病防治(一)	2	Livestock Health and Transmissible Diseases (I)	
222027	禽畜保健與傳染病防治實習	1	Practice of Livestock Health and Transmissible Diseases	
222028	專題討論	1	Special Projects	
222029	養殖場實習	1	Aquafarm Practice	
222030	專題討論	1	Seminar	
222031	微生物學	2	Microbiology	
222032	微生物學實習	1	Practice of Microbiology	

222033	免疫學概論	3	General Immunology	
課程代號 Course Number	科目名稱(中文) Course (Chinese)	學分 Credit	科目名稱(英文) Course (English)	頁次 Page

專業選修科目 Required Courses

222034	飼料生物學	3	Cultivation of Live Feed	
222035	蔬菜學	3	Olericulture	
222036	蔬菜學實習	1	Practice of Olericulture	
222037	植物繁殖學	2	Plant Propagation	
222038	植物繁殖學實習	1	Practice of Plant Propagation	
222025	計算機在農業之應用	2	Application of Computer in Agriculture	
222051	園藝作物產期調節	2	Forcing Culture of Horticultural Crops	
222003	糧食作物學	2	Food Crop	
222004	糧食作物學實習	1	Practice of Food Crop	
222036	畜產品利用學	2	Utilization of Animal Products	
222037	飼料配方設計	2	Design of Feed Formulation	
222038	水產繁殖學	2	Fish Breeding and Propagation	
222015	畜舍策劃與自動化	2	Animal House Arrangement and Automation	
222039	果樹學	3	Pomology	
222040	果樹學實習	1	Practice of Pomology	
222041	農園產品處理學	2	Postharvest Technology of Agricultural Products	
222042	農園產品處理學實習	1	Practice of Postharvest Technology of	
222018	農業經營	2	Agriculture Management	
222043	造園學	2	Landscape Architecture	
222044	造園學實習	1	Practice of Landscape Architecture	
222045	家畜育種學	1	Animal Breeding	
222056	作物病蟲害診斷與管理	3	Identification and Management of Diseases	
222057	作物病蟲害診斷與管理實習	1	Practice of Identification and Management	
222059	植物組織培養技術	2	Plant Tissue Culture Techniques	
222060	植物組織培養技術實習	1	Practice of Plant Tissue Culture Techniques	
222030	花卉學	2	Floriculture	
222031	花卉學實習	1	Practice of Floriculture	
222032	設施園藝	2	Horticultural Production Under Structures	
222033	設施園藝實習	1	Practice of Horticultural Production Under Structures	
222061	水產遺傳育種學	3	Fish Genetics and Breeding	
222062	水產經濟	2	Fishery Economics	
222116	糧食作物保護	2	Food Crop Protection	
222117	糧食作物保護實習	1	Practice of Food Crop Protection	
222220	水產生物學	3	Aquatic Biology	
222069	動物營養學	2	Animal Nutrition	
222100	計算機在統計之應用	2	Application of Computer in Statistics	
222065	家畜環境生理學	2	Environmental Physiology of Domestic Animal	
222066	畜產微生物學	2	Microorganism of Livestock Products	
222067	畜產微生物學實習	1	Practice of Microorganism of Livestock Products	
222068	世界養殖概論	2	Introduction to World Aquaculture	
222070	水產微生物學	1	Aquatic Microbiology	
222071	水產微生物學實習	1	Practice of Aquatic Microbiology	
222072	飼料分析與品質管技術	2	Feed Analysis and Quality Control	

課程代號 Course Number	科目名稱(中文) Course (Chinese)	學分 Credit	科目名稱(英文) Course (English)	頁次 Page
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專業選修科目 Elective Courses

222073	飼料分析與品質管理技術實習	1	Practice of Feed Analysis and Quality Control	
222074	水產加工學	3	Aquatic Processing	
222075	水產加工學實習	1	Practice of Fish products processing	
222076	甲殼類養殖	2	Crustacea Culture	
222077	海洋生態學	3	Marine Ecology	
222078	熱帶亞熱帶果樹學	2	Tropical and Subtropical Fruit Production	
222079	熱帶亞熱帶果樹學實習	1	Practice of Tropical and Subtropical Fruit	
222080	稻作學	2	Rice Science	
222081	果樹生理	2	Fruit Tree Physiology	
222082	肉品加工技術	2	Meat Product Processing	
222083	肉品加工技術實習	1	Practice of Meat Product Processing	
222084	養殖經營與管理	2	Aquaculture Business Management	
222085	觀賞魚養殖與管理	2	Culture and Management of Ornamental Fish	
222086	觀賞魚養殖與管理實習	1	Practice of Culture and Management of	
222087	寵物飼養管理	2	Pet Feeding and Management	
222088	乳品加工技術	2	Dairy Product Processing	
222089	乳品加工技術實習	1	Practice of Dairy Product Processing	
222090	畜產品衛生與管理	2	Hygiene and Control of Animal Products	
222091	畜產經營	2	Livestock Production Management	
222092	畜產經營實習	1	Practice of Livestock Production	
222093	休閒漁業	2	Recreational Fisheries	
222094	雜草管理	1	Weed Management	
222095	雜草管理實習	1	Practice of Weed Management	
222096	草坪管理	2	Turf Management	
222097	草坪管理實習	1	Practice of Turf Management	
222098	花卉利用	2	Flower Design and Decoration	
222099	花卉利用實習	1	Practice of Flower Design and Decoration	
222101	蘭花栽培	2	Orchid Culture	
222102	蘭花栽培實習	1	Practice of Orchid Culture	
222103	作物生產概論	2	Introduction to Crop Production	
222104	畜產企業管理	2	Livestock Business Management	
222105	水產養殖自動化	2	Aquaculture Automation	
222106	特藥用作物之利用	2	Utilization of Special and Medicinal Crops	
222107	特藥用作物之利用實習	1	Practice of Utilization of Special and	
222108	花卉產業的發展與經營	2	Development and Management of Ornamental	
222109	行銷學	3	Marketing	
222110	應用農藥學	2	Pesticide Application	
222111	食用菌栽培	2	Cultivation of Edible Fungi	
222112	食用菌栽培實習	1	Practice of Cultivation of Edible Fungi	
222113	作物生產概論	2	Introduction to Crop Production	

熱帶農業暨國際合作系

Department of Tropical Agriculture and International Cooperation

一、必修科目 Required Courses

- 222001 農藝園藝概論** 3 必 , 下
- 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。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。
- 222001 Introduction to Agronomy and Horticultural** 3 R , S
- 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. 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.
- 222002 農藝園藝概論實習** 1 必 , 下
- 藉由田間作物的育苗、栽培和管理過程，初步了解所涉及之生產技術、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。使學生從實際操作了解各類農藝作物之生產技術。內容包括栽培、田間整地、播種、種植、肥培管理、灌溉、病虫害防除、收穫機械化經營方式之操作等一系列栽培管理過程中，認識及熟悉作物及生長特性，以及栽培管理方法與各項田間實習。
- 222002 Practice of Agronomy and Horticultural** 1 R , S
- The goal is to train students 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. This course provides practical field production techniques for different agronomic crops. On each crop all phases of culture, including propagation method, field preparation, fertilizer management, irrigation system, harvest mechanical operation and plant protection etc., will be introduced and practiced.
- 222003 禽畜解剖生理學** 3 必 , 下
- 本課程以系統為主軸，介紹身體各部位構造與功能，依次分別為骨骼、肌肉、神經、血管循環、呼吸、消化、吸收、代謝、排泄、內分泌及生殖等系統。
- 222003 Anatomy and Physiology of** 3 R , S

Domestic Animal

The object of this course will introduce animal anatomy and physiology with organ system. The lectures contain skeleton system, joints, muscles system, nerves system, cardiovascular system, respiratory system, digestion system, urinary system, endocrine system and reproductive system.

222004 禽畜解剖生理學實習 1 必 , 下

本課程將利用標本及實際解剖生物來介紹身體構造，並在實驗室以顯微鏡、多項紀錄器等工具了解血液、心臟、循環、呼吸及生殖之生理現象。

222004 Practice of Anatomy and Physiology of Domestic Animal 1 R , S

Students will learn animal anatomy with specimens and necropsy and will learn physiological function on blood cell, heart function, circulation, respiratory volume and reproductive cycle by microscopy and polygraph instruments.

222005 有機化學 2 必 , 上

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、酮、酸、酯、胺）之官能基本反應，各類之合成方法，相互間之關係以及其實際之應用。

222005 Organic Chemistry 2 R , F

A systematic study of the important classes of carbon compounds (alkane, alcohol, ether, organic halide, aromatic compound, aldehyde, ketone, carboxylic acid, ester and amine)-reactions of their functional groups, methods of synthesis, relations, and uses.

222006 有機化學實驗 1 必 , 上

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，並依各官能基本之不同之化合物逐一實驗：烷、烯、炔、苯、有機鹵化物、醇、醚、醛、酮、羧酸、羧酸衍生物及胺等，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。

222006 Organic Chemistry Lab. 1 R , F

This course is devised in conjunction with the lecture material of the nonmajor organic chemistry. It intends to provide students a profound understanding of subject-matter from laboratory work and familiarity with basic laboratory technique. In addition to measurements of physical constants, the course is carried out in a functional approach: alkanes, alkenes, alkynes, benzenes, organic halides, alcohols, ethers, aldehydes, ketones, carboxylic acids, and the derivatives of carboxylic acid, amines. Each experiment emphasizes on the common chemical properties ascribed to functional groups.

222007 土壤與肥料 2 必 , 上

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。

222007 Soil and Fertilizer 2 R , F

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.

222008 土壤與肥料實習 1 必 , 上

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: (1)土壤樣品的採集與調制, (2)土壤剖面觀察, (3)土壤總密度與土粒密度的測定, (4)土壤機械分析, (5)田間容水量的測定, (6)土壤 pH 值和石灰需要量的測定, (7)不同土壤 pH 值對作物生育的影響, (8)土壤有機質和無機養份的測定, (9)土壤 CEC 的測定, (10)肥料認識與分析, (11)肥料用量實驗, (12)堆肥製作, (13)不同堆肥成熟度對作物生育的影響。

222008 Practice of Soil and Fertilizer 1 R , F

The laboratory course uses hands-on experiments to let students know more about soils, fertilizers and their roles in crop production. The experiments include: (1)Soil sampling and preparation, (2)Description of soil profile, (3)Determination of bulk density and particle density, (4)Particle size analysis, (5)Measurement of field capacity, (6)Soil pH and lime requirement, (7)pH effect on crop growth and development, (8)Soil organic matter and mineral nutrients analysis (9)Cation exchange capacity, (10)Knowing fertilizers and fertilizer analysis, (11)Optimizing fertilizer application, (12)Compost making, (13)Compost maturity on crop growth and development.

222009 植物生理學 3 必 , 上

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。

222009 Plant Physiology 3 R , F

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 .

222010 植物生理學實驗 1 必 , 上

本實驗課程在使學生能以實驗印證理論, 增進學生對理論之瞭解。實驗內容包括擴散作用、滲透作用、原生質分離之觀察、水勢、滲透勢、蒸散作用及根壓之測定, 礦物營養診斷、輸導作用、呼吸作用、呼吸酵素之一般檢驗, 植物蛋白質之抽取及分析、光補償點之測定及利用薄層色層分析法分離光合色素、葉綠素吸收光譜與定量之測定、植物生長調節劑生理功能之觀察等。

222010 Plant Physiology Lab. 1 R , F

The laboratory work is to acquaint students with understanding of both practical operation as well as theoretical aspects of the lecture subjects. The contents include the observation of diffusion, osmosis and plasmolysis, measurement of water potential and transpiration, plant nutrition and symptoms of mineral deficiency , measurement of root pressure, translocation of organic solutes in phloem, quantity of respiratory enzymes, extraction and quantitative determination of plant protein, seperation of photosynthetic pigments by TLC, chlorophyll absorption spectrum and quantitative determination, physiological functions of growth regulators.

222011 特用作物學 2 必 , 上

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。

222011 Special Crops Science 2 R , F

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.

222012 特用作物學實習 1 必 , 上

使學生實際認識各種嗜好作物及熟悉其栽培管理方法。

222012 Practice of Special Crops Science 1 R , F

The objective of this course is to give the students understanding the morphology of recreation crops, and practicing the cultivation methods.

222013 牧場實務實習 1 必 , 上

本課程之目的在使學生在牧場實務實習中，將所學理論與實際配合，在操作中學習。課程內容如下：畜牧之現在及未來之展望，二、牧場工作簡介，三、養豬實習：(一)繁殖豬、(二)小豬、(三)肉豬，四、蛋雞實習，五、肉雞實習，六、種雞實習，七、孵化實習，八、肉牛實習，九、乳牛實習：(一)仔牛照顧、(二)繁殖管理、(三)產乳管理，十、牧草管理：(一)種草、(二)一般管理、(三)收穫、(四)製造乾草，十一、犬隻管理。

222013 Practice of Livestock Farm 1 R , F

The purpose of the course is to let students match the theory and practice, to reach the goal of training---learning by doing. The following items are included: 1. future and past of animal production, 2. introduction of animal farm, 3. practice of swine production, 4. practice of layer production, 5. practice of broiler production, 6. practice of feeder production, 7. practice of hatchery production, 8. practice of beef cattle production, 9. practice of dairy cattle production, 10. management of grassland, 11. management of dogs.

222014 世界養殖概論 2 必 , 上

本課程光介紹世界水產養殖現況及台灣養殖現況，後再討論有關養殖水質處理，養殖系統，養殖設備及依生物學的觀點介紹各種具有經濟價值之水產生物之養殖技術。

222014 Introduction to World Aquaculture 2 R , F

The theme of the course provides the students the current knowledge of aquacultural techniques, survey of the fields, water qualities and treatments, culture systems, culture facilities, and biology and culture techniques of the commercially aquatic organism .

222015 生物化學 2 必 , 上

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、遺傳訊習簡介--包括儲存、轉移及表現。

222015 Biochemistry 2 R , F

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.

222016 生物化學實習 1 必 , 上

此實習之內容包括以下三大部：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。

222016 Practice of Biochemistry 1 R , F

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. Quantitative and qualitative determination of carbohydrates.

222017 動物營養學 3 必 , 下

本課程主要討論動物營養的基本概念，以及如何利用各種飼料原料配合成平衡的各種動物飼料，在台灣的環境下，從事家禽飼養。討論內容包括：營養素的代謝、營養需要量的測定及資料應用、飼料原料的選擇、及各種家禽的營養需要與飼料配製，包括：肉雞、蛋雞、種雞、火雞、肉鴨、蛋鴨及鵝等。

222017 Animal Nutrition 3 R , S

This course is designed to discuss the basic concepts of poultry nutrition and how to use feed ingredients to formulate balanced poultry feeds for poultry production, especially under Taiwan environmental conditions. The contents include : metabolism of nutrients, nutrition requirements and application of information, feed ingredients, and feed formulation for all kinds of poultry, include : broilers, layers, breeders, turkeys, ducks and geese.

222018 遺傳學 2 必 , 上

本課程之目的，在使學生瞭解生物如何遺傳、遺傳拼圖、細胞遺傳、變異、遺傳物質之構造、核酸複製、轉錄、轉譯、基因表現之調控、基因工程、族群遺傳學、及生物進化、遺傳學與社會之關係。

222018 Genetics 2 R , F

The purpose of this course is to provide undergraduate students knowledge of how organisms inherit, genetic mapping, cytogenetics, variation, the structure of genetic materials, DNA replication, transcription, translation, control of gene expression, genetic engineering, population genetics, evolution, and the relationship of genetics and the society.

222019 遺傳學實習 1 必 , 上

本課程之目的，在使學生透過實際操作與試驗，瞭解遺傳學之原理，實驗內容包括：碗豆七個性狀遺傳、植物根尖染色體觀察、果蠅唾腺染色體、減數分裂、統計方法、細菌抗藥性、質體之抽取及限制酵素切割及電泳分離、血型、人類遺傳。

222019 Practice of Genetics 1 R , F

The purpose of this laboratory is to train undergraduate students with practical genetics, including the basic principles of genetics, inheritance of pea traits, root tip chromosomes, Drosophila salivary polytene chromosomes, meiosis, statistical methods, bacterial antibiotic resistance, plasmid isolation, restriction, and gel electrophoresis, blood type, and human genetics.

222020 作物營養學 2 必 , 上

本課程主要在闡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。

222020 Crop Nutrition Management and 2 R , F

Diagnostic Techniques

The course emphasizes the principle and methods of crop nutrition management, symptoms of nutrient disorders, diagnostic techniques and amendment methods.

222021 作物營養學實習 1 必 , 上

本實習主要在使學生認識作物無機營養失調的症狀,以及熟悉作物無機營養的診斷技術與分析方法。

222021 Practice of Crop Nutrition 1 R , F

Management and Diagnostic Techniques

The course offers hands-on practices on identifying symptoms of crop nutrient disorders and other diagnostic techniques, especially on plant and soil analysis.

222022 水族動物疾病學 3 必 , 下
本課程講解比較魚類及其他動物之主要生理解剖構造之不同，以了解魚病發生之過程,介紹各種魚病之病因、診斷、疫學預防及控制。又附帶講解與公共衛生有關之魚類疾病。

222022 Aquatic Animal Diseases 3 R , S
This Course emphasizes on major differences in fish and animal structure and physiological features for understanding of fish disease development, Etiology, diagnosis, epizootiology , prevention and control of disease in fish, including those important to the public health.

222023 專題討論 1 必 , 上
本專題討論主要配合校外專家及學生，針對農園藝作物之生長、栽培管理、遺傳育種、採收處理等專題，進行專題報告。學生之專題報告、係由學生確立主題、資料收集、報告撰寫然後實際之口頭發表，期能提昇其資料收集與整理之能力，訓練其在公眾場合表達之能力。

222023 Seminar 1 R , F

The seminar will focus on agronomic and horticultural crops in the production, culture, breeding and genetic, postharvest handling etc. aspect for professional research studies. The students will participate in setting up major topics, report writing and actual seminar practice. The course will enhance the ability of organization so that students can speech in public for participants.

222024 作物育種學 3 必 , 下
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：1.緒論：介紹育種史及育種之重要性。2.作物育種之遺傳學基礎。3.自交不和合及雄不稔性。4.引種法。5.純系育種法。6.選拔育種法。7.雜交育種法。8.回交育種法。9.雜種優勢(F1)育種技術。10.抗病品種之育成。11.遠緣雜交。12.抗蟲育種。13.誘變育種。14.遺傳工程之現況及在農園作物上之應用。

222024 Crop Breeding 3 R , S

The goals of this course are to acquaint students with knowledge of principles and techniques used in crop breeding. Course contents include: 1. Introduction : history and importance of crop breeding. 2. Genetic background of breeding. 3. Self-incompatibility and male sterility. 4. Crop introduction. 5. Pure-line breeding. 6. Selection.7. Hybridization. 8. Back cross. 9. F1 hybrid breeding. 10. Breeding for disease resistance. 11. Interspecific hybridizations. 12. Breeding for insect resistance. 13. Mutation breeding. 14. Genetic engineering in crop improvement.

222025 作物育種學實習 1 必 , 下

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。

222025 Practice of Crop Breeding 1 R , S

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...

222026 禽畜保健與傳染病防治 (一) 2 必 , 上
 使學生實際瞭解消毒及預防措施，並介紹禽畜常見的傳染病、寄生蟲病及其它疾病發生原因、症狀及其預防要領，並使疾病發生時能及時作正確處理。

222026 Livestock Health and Transmissible Diseases (I) 2 R , F
 This course will introduce the theory of selected important animal disease to students. It will provide the students knowledge to control animal diseases, aseptic procedure, and disease prevention conception.

222027 禽畜保健與傳染病防治實習 1 必 , 上
 本課程係配合禽畜保健而開，主要使學生在操作觀察中瞭解各種禽畜常見疾病之特徵，並其預防及消毒措施，使學生實習後對禽畜之保健預防有更進一步認識。

222027 Practice of Livestock Health and Transmissible Diseases 1 R , F
 This course lays on the methods of disease diagnosis and prevention. It provides the basic concepts and operative practices of swine, cattle, chicken and dog disease.

222028 專題討論 1 必 , 下
 經由實務書寫報告，口頭發表及討論，培養學生對畜產知識的歸納及分析，同時訓練學生口頭表達能力。

222028 Special Projects 1 R , S
 The purpose of this course is to train student how to design, collect and report ideals, covering the modern aspects of animal science and aquaculture and farm operation. Students need to give oral presentation and paper report.

222029 養殖場實習 1 必 , 上
 課程將教導學生實際養殖場中各種養殖器具之操作、養殖場水質之管理、操作措施。各種魚蝦貝類之養殖及遇到緊急狀況(如:浮頭、泛池)之應變措施。

222029 Aquafarm Practice 1 R , F
 In this class, students will be ask to operate all practical equipment in farm and taught how to manage the farm in order to success in aquaculture.

222030 專題討論 1 必 , 下
 本專題討論主要配合校外專家及各學生，針對農園藝作物之生長、栽培管理、遺傳育種、採收處理等專題，進行專題報告。學生之專題報告，係由學生確立主題、資料收集、報告撰寫及實際口頭發表，期能提昇其資料收集與整理之能力，並訓練其在公眾場合表達之能力。

222030 Seminar 1 R , S
 The seminar will focus on agronomic crops include their production, culture, breeding and genetic, postharvest handling etc. aspects for professional research studies. The students will participate in setting up major topics, information collection, report writing and actual seminar practice. The course will enhance the ability of organization and be able to speech in public for participants.

222031 微生物學 2 必 下
 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。

222031 Microbiology 2 R S

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.

222032 微生物學實習 1 必 下

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。

222032 Practice of Microbiology 1 R S

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.

222033 免疫學概論 3 必 ，下

本課程主要目的提供學生一個對免疫學的基本概念。隨著農場管理技術的進步，家畜的飼養密度和生長表現都持續的在提升。在這種情況下，動物更容易受到傳染病的危害而對產業造成嚴重的經濟損失。動物本身的免疫力在抵抗外來病原菌和病毒上扮演著重要的角色。本課程是著重在介紹免疫系統、各種免疫反應、宿主及病原交互作用、及疫苗，獲得這方面的知識能讓學生了解農場的疾病防治。

222033 General Immunology 3 R S

The objective of this course is to provide the students a basic background of immunology. The housing density and the growth performance of domestic animals keep increasing as the consequence of advanced farm management. Under this circumstance, animals are more susceptible to infectious diseases which lead to significant economic losses to the industry. The immunity plays a pivotal role in protecting the animals from invading pathogens and viruses. This course is focused on the introduction of immune system, different types of immune responses, host-pathogen interaction, and vaccination. Acquisition of such knowledge is fundamental for the students to understand disease-controlling strategies of animal husbandry.

二、選修科目 Elective Courses

222034 飼料生物學 3 選 ，下

本課程專門講授水產餌料之培養技術，其中包括海洋酵母、矽藻、扁藻、鞭毛藻、纖毛蟲、輪蟲、水蚤等之培養技術及載體餌料生物之利用技術。

222034 Cultivation of Live Feed 3 S ,S

The course is provided with the needs of students in one semester lecture. The topics are especially designed to enhance their training on the cultural techniques of living food, i.e., marine yeasts, diatoms, tetraselmis, rhodomonas, ciliata, rotifera, daphnia etc, and techniques on the carrier living food for fisheries.

222035 蔬菜學 3 選 ，上

本課程之目的，在使學生獲得有關蔬菜栽培及生產之基本原理與技術等知識，講授內容包括：.蔬菜園藝之性質及利益、蔬菜之效用、蔬菜之種類及分類、蔬菜生產之類型、氣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。

222035 Olericulture 3 S ,F

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, introduction of the individual vegetable crops in Taiwan.

222036 蔬菜學實習 1 選 , 上

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。

222036 Practice of Olericulture 1 S ,F

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.

222037 植物繁殖學 2 選 , 上

本課程主要在介紹各種植物繁殖方法的理論及技術。內容包括：繁殖用之設施、介質、肥料、容器及其衛生處理；種子繁殖--種子的篩選、生產和管理、種子繁殖的技術；營養繁殖--母本選拔及管理，扦插法、嫁接法、壓條法；無菌微體繁殖法--組織培養；特殊植物之繁殖方法。

222037 Plant Propagation 2 S ,F

The objective of this course is to introduce the principles and techniques of plant propagation. The content includes: propagation structures, media, fertilizers, sanitation and containers; seed propagation--seed selection, production and handling, and propagation by seed; vegetative stock selection and management, propagation by cuttings, grafting, budding and layering; aseptic methods of micropropagation; propagation of selected plants.

222038 植物繁殖學實習 1 選 , 下

本實習操作配合"植物繁殖技術"課程，使學生熟習各種植物繁殖技術。實習項目包括：栽培環境、介質、肥料、容器及消毒方法之認識；種子活力測定、播種、育苗、定植、及採種和保存技術；營養繁殖用之母本選拔及管理，扦插、嫁接、壓條等繁殖技術；組織培養。

222024 Practice of Plant Propagation 1 S ,F

The objective of this course is making students familiar with the techniques of plant propagation. The content is: study on propagation structures, media, fertilizers, sanitation and containers; seed selection, production and handling, propagation by seed; stock plant selection and management, propagation by cuttings, grafting, budding, and layering; tissue culture.

222025 計算機在農業之應用 2 選 , 下

課程內容主要係探討電算機於農業生產過程中所可能扮演之角色及其應用方式，並學習如何將實作技術配合硬體架構轉換為電算機之作業軟體。

222025 Application of Computer in 2 S ,S

Agriculture

This course will investigate the function and application of computer in agronomic production and learn how to transfer hardware machinery operations into computer software control.

222051 園藝作物產期調節 2 選 , 上

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。

222051 Forcing Culture of Horticultural Crops 2 S , F

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.

222003 糧食作物學 2 選 , 下

使學生瞭解食用作物之意義、種類、起源、分佈、產銷供需情形、生理、生態、生育之環境、栽培之方法、輪作制度、收穫調製、儲藏及利用之方法，結論中包括食用作物增產方法與國計民生、社會治安、國家前途及世界和平之關係。

222003 Food Crop 2 S , S

The meaning, kind, origin, distribution, production and marketing, supplying and demanding, characteristics of crop physiology and ecology, growth environment, cultivated method, rotation farming system, method of harvest and manufacture, storage and utilization of edible crops are introduced in this course. The techniques of increasing crops production, the relationship among people life, social security, country future and world peace are discussed in conclusion.

222004 糧食作物學實習 1 選 , 下

實際田間主要種類之糧食作物生產操作，使學生了解其植株生長特性，栽培方式及收穫，調製等技術，並於室內辨認不同作物之種子特性，植株各部位特性及生理、生態結構。

222004 Practice of Food Crop 1 S , S

All students will attend the field practice of major food crops to understand the plant growth characters, culture methods, management and harvest techniques. In the laboratory: seed characteristics, plant characters, physiological and ecological structures will also be studied. affecting losses of horticultural products, Various postharvest handling techniques and storage methods to reduce postharvest losses are also introduced.

222036 畜產品利用學 2 選 , 上

本課程介紹畜產品利用的方式與種類，使學生對乳、肉、蛋及禽肉與副產物利用有概括認識，並可提供往後研習肉品、乳品與蛋品加工之參考。

222036 Utilization of Animal Products 2 S , F

This course will discuss the methods and type of animal products utility, in order to give students a basic insight into the meat, milk, egg, and poultry meat and their by-products utilization, and for the further study of meat processing and egg processing technique.

222037 飼料配方設計 1 選 , 上

本課程係傳授各種禽畜飼料添加物及飼料配方之最新設計技術，其內容包括：飼料添加物之種類、特性及用途；飼料配方之設計原理與設計方法；養豬飼料配方之設計；養雞飼料配方之設計；反芻動物飼料配方之設計；其他飼料配方之設計。

222037 Design of Feed Formulation 1 S , F

The object of this course is to acquaint the students with feed additives and the modern design technique of feed formulation for the livestock and poultry, with contains: The kind and using of the feed additives, principle and method of designing feed formulations, design of swine feed formulation, design of poultry feed formulation, design of ruminants feed formulation, design of the other animal feed formulation.

222038 水產繁殖學 3 選 , 上

本課程是介紹重要養殖水產生物種的選擇與培育、催熟與產卵及孵化與種苗的培育技術。

222038 Fish Breeding and Propagation 3 S , F

This course instructs the selection, culture, hormonal injection techniques and ovulation of economically aquatic organism maturation and hatch of fertilized eggs and culture larvae (or fry) techniques.

222015 畜舍策劃與自動化 2 選 , 上

動物需要：環境需要、行為需要、動物福利之考量、環境對健康之影響；基本原理：材料、熱量交換原理、通風、整體規劃、禽畜尺吋；畜舍各論：豬舍、雞舍、牛舍、羊舍。

222015 Animal House Arrangement and Automation 2 S , F

Animal requirement : environment requirement, behavior requirement, animal welfare needs, environment and health. Basic requirement : material, thermal exchange, ventilation, arrangement, size of animals. Animal house arrangement : pig house, poultry house, cattle house, goat and sheep house.

222039 果樹學 3 選 , 下

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。

222039 Pomology 3 S , S

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.

222040 果樹學實習 1 選 , 下

本實習課程提供果樹學田間實地操作之訓練，包括：1.果樹之建立與管理，2.土壤肥料管理，3.果樹整枝修剪，4.果苗繁殖，5.果樹分級、包裝、採收後處理技術。

222040 Practice of Pomology 1 S , S

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.

222041 農園產品處理學 2 選 , 下

本課程主要在介紹果園產品收穫後之生理變化及處理與貯運技術，包括選別、分級、包裝、預冷、貯藏及運輸等等。

222041 Postharvest Technology of Agricultural Products 2 S , S

This course is to offer knowledge on postharvest physiological changes and factors affecting

losses of horticultural products. Various postharvest handling techniques and storage methods to reduce postharvest losses are also introduced.

222042 農園產品處學實習 1 選 , 下

本實習主要在使學生熟悉農園產品採收後處理之有關技術，內容包括包裝、果品處理、貯藏、品質分析、呼吸率及乙烯發生率測定...等等，使學生能將理論與實習實際結合。

222042 Practice of Postharvest Technology of Agricultural Products 1 選 , S

This course is to make students practice the various postharvest handling and storage techniques, including packaging, handling, storage, quality analysis, and determination of respiration rate and ethylene production, among others to let students understand both practical operation as well as theoretical aspects of the lecture subjects.

222018 農業經營 2 選 , 下

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、成本記帳與財物、營業登記與檢疫法規。

222018 Agriculture Management 2 S , S

This course offers students with theory and techniques of crop cultivation. Recent development on the concepts and efficiency of agricultural farm. 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 and marketing, practical management, accounting, registration and quarantine rules.

222043 造園學 2 選 , 下

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。

222043 Landscape Architecture 2 S , S

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.

222044 造園學實習 1 選 , 下

本實習包含：造園設計實務（園地測量、繪製設計圖樣）、造園施工實物（土工、木工、石工、水電工）、庭園管理與維護實務（器具之使用、樹木植栽之修剪及維、草皮之管理及維護）。

222044 Practice of Landscape Architecture 1 S , S

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.

222045 家畜育種學 1 選 , 下

本課程目的在使學生習得將遺傳學基本法則應用於改進禽畜生產性能上，識別對禽畜生產及其效率具經濟價值之性狀，利用所獲得的各項資料評估動物的育種價值並準確性評估各

種育種選拔計劃之可行性及預期效果。

222045 Animal Breeding 1 S ,S

This course is to introduce the primary principle of genetics for the animal production. The student will understand the economic trait of animal and apply the principle of genetics on the performance improvement of animal production. The performance improvement and progeny evaluation are intended to give the student a feeling for what can be expected from the application of animal breeding in the changing of animal population. The student will sense the underlying concept that process and profits come from a balanced consideration of genetic, environmental and economic considerations.

222056 作物病蟲害診斷與管理 3 選 ,下

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。

222056 Identification and Management of Diseases and Pests on Crop Plant 3 S ,F

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.

222057 作物病蟲害診斷與管理實習 1 選 ,下

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。

222057 Practice of Identification and Management of Diseases and Pests on Crop Plant 1 S ,S

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.

222059 植物組織培養技術 2 選 ,下

該課程著重於討論植物組織培養之各種技術。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。

222059 Plant Tissue Culture Techniques 2 S ,S

The objective of this course is to discuss 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.

222060 植物組織培養技術實習 1 選 ,下

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。

222060 Practice of Plant Tissue Culture 1 選 ,S
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.

222030 花卉學 2 選 ,上

本課程旨在介紹與花卉生產相關的科技、產業和應用範圍。內容包括定義，相關學科，分類，產業概況，花卉應用，植物生長發育及開花生理：營養生長與生殖生長的轉變機制、環境因子的影響，產期調節，採收後處理和運銷。並將主要作物依其特性分為：短日植物、日中性植物、球根植物、觀葉植物、花壇植物，簡介其商業化生產方式。

222030 Floriculture 2 S ,F

The objective of this course is to introduce floriculture related sciences, technologies, and businesses. Included topics are: definition, classification, and scopes of floriculture; floral utilization; flowering physiology and induction; postharvest management; introduction to commercial production of major short-day plants, day-neutral plants, bulbs, foliage plants and bedding plants.

222031 花卉學實習 1 選 ,上

實習單元有：穴盤育苗、田間及盆栽作物的栽培管理、草花辨認、花卉的利用設計及英文論文研讀。

222031 Practice of Floriculture 1 S ,F

Topics of activities are: plug production, outdoor plants and potted plants growth and management, plant identification, floral utilization, and literature review.

222032 設施園藝 2 選 ,上

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、生長調節劑的使用、穴盤育苗等及相關的機械化設備。

222032 Horticultural Production Under Structures 2 S ,F

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.

222033 設施園藝實習 1 選 ,上

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。

222033 Practice of Horticultural Production Under Structures 1 S , F

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.

222061 水產遺傳育種學 3 選 , 下

課程涵蓋下述幾個主題：魚類及水生生物遺傳形質介紹、魚類及水生生物遺傳原則、魚類及水生生物遺傳形質的選擇、應用及族群育種方法、魚類及水生生物體內染色體或核酸改變的檢測方法介紹、魚類及水生生物染色體組的操作及其應用、魚類及水生生物基因選取、重組建構、轉形、轉殖表現及其應用。

222061 Fish Genetics and Breeding 3 S , S

The course covers following topics: The genetic characteristics in fish population and aquatic organisms, the genetic principals in fish and aquatic organisms, a selection of genetic characteristics for application to human life and breeding methods in fish population, the detection of a change of chromosome or DNA in fish cells, chromosome manipulation and application in fishery biology, gene selection, constructure, transformation, expression and application in fishery biology.

222062 水產經濟 2 選 , 下

本課程旨在教導學生結合經濟學理論與水產經濟管理之實務，進行專業的研究與探討。隨著我國加入 WTO，及國內外社會經濟因素的變動，且前我國水產事業亦產生經營之困難問題，為因應並解決上述各種困難與問題，必須就政策面及執行面研擬適當之策略，俾能提昇競爭力與繁榮漁村生活。

222062 Fishery Economics 2 S , S

We live in a complex and ever-changing world. Tremendous changes have been made in production methods used not only in aquaculture, but agriculture, in general. Managers of today's aquacultural farms must be efficient and knowledgeable with respect to economics, management, and financial issues. These interdependencies do not stop at our borders.

Following Taiwan's accession to the World Trade Organization (WTO), and with ever-changing international and domestic socio-economic environments, the aquaculture industry faces new and daunting challenges. In order to understand and solve these obstacles, proper strategies should be planned, implemented, and executed by policymakers to upgrade the competitive capabilities and prosperity of fishing villages. This course is aimed to instruct undergraduates in academic research and exploration by integrating economic theory with aquacultural management practices.

222116 糧食作物保護 2 選 上

使學生瞭解食用作物之意義、種類、起源、分佈、產銷供需情形、生理、生態、生育之環境、栽培之方法、輪作制度、收穫調製、儲藏及利用之方法，結論中包括食用作物增產方法與國計民生、社會治安、國家前途及世界和平之關係。

222116 Food Crop Protection 2 S F

The meaning, kind, origin, distribution, production and marketing, supplying and demanding, characteristics of crop physiology and ecology, growth environment, cultivated method, rotation farming system, method of harvest and manufacture, storage and utilization of edible crops are introduced in this course. The techniques of increasing crops production, the relationship among people life, social security, country future and world peace are discussed in conclusion.

222117 糧食作物保護實習 1 選 上
 實際田間主要種類之糧食作物生產操作，使學生了解其植株生長特性，栽培方式及收穫，調製等技術，並於室內辨認不同作物之種子特性，植株各部位特性及生理、生態結構。

222117 Practice of Food Crop Protection 1 S F
 All students will attend the field practice of major food crops to understand the plant growth characters, culture methods, management and harvest techniques. In the laboratory: seed characteristics, plant characters, physiological and ecological structures will also be studied. affecting losses of horticultural products, Various postharvest handling techniques and storage methods to reduce postharvest losses are also introduced.

222220 水產生物學 3 選 ，下
 本課程之目的在於使學生對於在魚類及其製品之水產生物的繁殖與控制之方法有所了解，其內容包括水產生物之分類、水產生物之培養及水產生物之抑制原理。

222220 Aquatic Biology 3 S S
 The objective of Aquatic Biology is to introduce the philosophy of development in fishery Biology and to understand how we control Biology in the fish and it's products. The emphasis of this course has been on the taxonomy of fishery Biology, culture of fishery Biology, and control philosophy of fishery biology.

222069 動物營養學 2 選 ，下
 本課程主要討論動物營養學的原理，包括：營養學的發展、動物營養消化生理、飼料的營養組成分、消化率測定、營養需要量測定、營養素的代謝利用過程，包括碳水化合物、脂質、蛋白質、礦物質、維生素及水之代謝；最後並討論營養性疾病及營養知識的應用。

222069 Animal Nutrition 2 S ,S
 This course will discuss the principle and application of animal nutrition. The contents include : the development of nutrition, digestive physiology, the composition of feed, the measurement of digestibility, the metabolism of nutrients ; carbohydrates, fats, proteins, minerals, vitamins and water ; nutritional deficiency and application of nutritional knowledge.

222100 計算機在統計之應用 2 選 ，上
 課程內容包括電算機利用，統計軟體介紹(SAS 及 EXCEL)，以農業資料應用於生物統計之敘述統計及檢定，如何採用適當分析方法並解說電腦分析結果與其意義。

222100 Application of Computer in Statistics 2 S ,F
 This course introduces the application of statistical computing softwares including SAS, SPSS and Excel, to analyze agricultural data. The proper usage of analysis methods and the explanation of results will be discussed in class.

222065 家畜環境生理學 2 選 ，上
 本課程主要討論環境因素、氣候條件以及動物的各種生理控制機構；進而探討環境對動物所造成的影響，以及克服的方法；從動物行為、飼養管理以及畜舍設計等方面來提高畜牧生產的效率。台灣地處亞熱帶，每年長達 6~7 個月的時間處在高溫高濕的緊迫環境，如何克服環境緊迫所造成的不良影響，提高畜牧生產，實為一重要課題。

222065 Environmental Physiology of Domestic Animal 2 S ,F
 This course will discuss the environmental factors, climatic conditions and physiological mechanisms of domestic animals, and further investigate the effects of environments on the

performance of animals. The important object of this course is to evaluate some methods to overcome the animal production problems due to the warm humid environments in Taiwan.

222066 畜產微生物學 2 選 , 上

本課程著重於討論影響畜產品品質之微生物學特性。內容包括畜產品原料中微生物之性質和殺菌條件，原料之貯存技術，發酵微生物之加工特性及成品之微生物變敗等。使學生對畜產品微生物之操控更具信心。

222066 Microorganism of Livestock Products 2 S , F

The objective of this course is to give the student more confidence in the microbial control of animal products. It includes the properties and destruction of microorganism in animal products, storing technique of raw materials, processing characters of fermented culture, and microbial spoilage final products. The topic concern in the microbiological characters of milk, meat and egg are put in the priority.

222067 畜產微生物學實習 1 選 , 上

本實習配合畜產品微生物學之課程，內容包括微生物培養、菌種活化、微生物檢驗及鑑定，抗生素檢查與發酵產品之製造，期使學生能於畜產品微生物操作及掌控更具信心。

222067 Practice of Microorganism of Livestock Products 1 S , F

The objective of this course is to give the student more confidence in practically handling the microbial condition of animal products. It includes the activation and cultivation of pure culture, determination and identification of microorganisms, examination of antibiotics, and manufacture of fermented products, etc.

222068 世界養殖概論 2 必 , 上

對世界各國養殖業發展之情形及遠景做一敘述。內容包括介紹世界養殖業目前發展趨勢及新技術之開發情形，並介紹世界主要養殖種類及養殖國家之養殖發展概況及未來發展趨勢等，期能給學生養殖之世界觀以利日後從事養殖事業之發展。

222068 Introduction to World Aquaculture 2 R , F

This course will introduce the aquaculture development status in the world, which include the present situation, future outlook, and new developed technique in aquaculture. Besides, the status of major culture species, major cultured countries and the future of aquaculture will also be introduced. The purpose of this course is to train students to have a worldwide point of view in aquaculture.

222070 水產微生物學 2 選 , 下

本課程之目的在於使學生對於在魚類及其製品之水產微生物的繁殖與控制之方法有所瞭解，其內容包括：水產微生物之分類、水產微生物之培養、水產微生物之抑制原理。

222070 Aquatic Microbiology 2 S , S

The objective of this course is to give the student more confidence in the philosophy of fishery microbiology development and control in the fish and it's products, which contains: Taxonomy of fishery microbiology, culture of fishery microbiology, philosophy of fishery microbiology control.

222071 水產微生物學實習 1 選 , 下

本課程之目的在於使學生對於在魚類及其製品之水產微生物的培養與控制具操作經驗，本實習之內容包括：水產微生物之活化與培養、水產微生物之檢驗與鑑定、水產微生物之控

制。

222071 Practice of Aquatic Microbiology 1 S ,S

The objective of this course is to give the student more confidence in the practically handling the fishery microbiology of fish and it's products. The exercise of fishery microbiology contains: Activation and culturation of fishery microbiology, determination and indentification of fishery microbiology, control of fishery microbiology.

222072 飼料分析與品管技術 2 選 , 上

本課程之設計主要在介紹正確的分析方法，儀器的正確使用，以減少分析結果之誤差，配合飼料所需單位原料之品質檢查方法及配合飼料製造流程之品管現代技術，內容包括：1. 飼料分析的基本操作、2.飼料分析的方法、原理和應用、3.單位原料之品質管理、4.配合飼料之品質管理、5.添加物之品質管理、6.飼料製造之品質管理。

222072 Feed Analysis and Quality Control 2 S ,F

This course is designed to give the students to use the instruments correctly and accurately, to reduce the analytical error, to assist the students to understand the modern technique about the detection of the ingredients and the quality control of the formula feeds. The contents include: The basic operation of feed analysis, methods, principles and applications of feed analysis, the judgement and quality control of the ingredients, the quality control of the formula feeds and feed additives, the quality control of the formula feeds manufacturing.

222073 飼料分析與品管技術實習 1 選 , 上

本實習內容主要是配合「飼料分析與品管技術」課程，使學生實際進行所需要之操作訓練；其內容包括：1.實驗室的安全認識、2.採樣及分析基本訓練、3.飼料各項分析的分析方法及操作、4.各種飼料原料之品質鑑定、5.飼料原料摻雜物之檢出。

222073 Practice of Feed Analysis and Quality Control 1 S ,F

This practice course is in associate with the course of feed analysis and quality control to provide the training to students on this technique. The contents include: The safety of laboratory, sampling and basic operation of analysis, the methods that may be employed for the detection and determination of feeds, quality control of feedstuffs, quality control of feeds plants in manufactured processing.

222074 水產加工學 3 選 , 上

水產加工品學之範圍主要包括食品與工業用品。水產食品加工品之製造方式是以新鮮水產品依乾燥、鹽藏、罐製及冷凍方式來完成。水產加工之工業產產品之項目包括魚粉、魚油、魚骨粉、珊瑚、貝殼及珍珠等產品。

本課程內容包括上述所提及水產品的加工程序及此工業之發展與展望。

222074 Aquatic Processing 3 S ,F

The manufactured marine products are usually classified roughly into articles of food and industrial uses. Marine products include dried, salted, canned and frozen materials which are used in the same way as raw fresh ones. Articles for industrial use are fish meal, fish oil, fish bone meal, coral, shell, pearls et al.

This lecture contains the processing of marine seafood products that mentioned above outlook of this industry.

222075 水產加工學實習 1 選 , 上

本課程內容主要在使得學生能練習水產加工品(包括水產冷凍品、水產罐製品、水產乾製

品、水產魚香腸及水產副產品)之加工方式及其過程，我們希望學生能對上述水產加工方式及流程能實際操作並進一步能改進發展之。

222075 Practice of Fish products processing 1 S , F

This lecture contains the practice of marine products processing including refrigeration of marine products, canned marine products, dried marine products, fish sausage and fish solubles. We hope the pupil can learn how to make it and develop a new ones.

222076 甲殼類養殖 2 選 , 上

本課程專門介紹草蝦(虎蝦)、淡水長臂大蝦、白蝦及螃蟹養殖新技術，其中包括食物鏈之建立，水色管理、水質管理、池底管理、救水技術、池塘診視、生物制衡技術、生物製劑之利用技術及疾病防治等。

222076 Crustacea Culture 2 S , F

This course is to introduce the modern techniques on the culture of grass shrimp (tiger prawn)(P. monodon), giant freshwater prawn (M. rosenbergi), white shrimp (P. vannamei) and carps. The main topics are focused on the establishment of food-chain, water colour management, water quality management, pond bottom management, water colour saving techniques, diagnosis of pond situation, biocontrol techniques, microbial using techniques and prevention of crustacean diseases etc.

222077 海洋生態學 3 選 , 上

本課程將分別介紹海洋的構造，海洋中水的流動，海洋中生物之組成，影響海洋生物分佈之因子，海洋生態系中生物組成之變動，食物鏈和食物網。最後，再深入探討人類的活動(生產、休閒、捕撈等)如何影響到整個海洋生態系。

222077 Marine Ecology 3 S , F

The class will combine the following subjects: 1.the structure of ocean 2.water circulation and motion in ocean 3.comportion of marine in organisms 4.The factors affect distribution of marine organisms 5.changes of marine community in ecosystem 6.Food chains and food web in the ecosystem. Then, we will discuss how human activities affect the marine ecosystem in over all. Introduction of practical examples in Taiwan will also discussed in lectures.

222078 熱帶亞熱帶果樹學 2 選 , 上

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。

222078 Tropical and Subtropical Fruit Production 2 S , F

This course is to cover the culture practices and management of mango, litchi longan, wax-apple, banana, pineapple, guava, papaya and carambola etc...

222079 熱帶亞熱帶果樹學實習 1 選 , 上

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。

222079 Practice of Tropical and Subtropical Fruit Production 1 S , F

This course covers culture practices and management of mango, litchi longan, wax-apple, banana, pineapple, guava, papaya and carambola etc.

222080 稻作學 2 選 , 上

使學生瞭解水稻之重要，關於稻之栽培起源，稻之原種，稻之分佈及產銷，次敘述稻之形態、生理以及本省栽培優良品種特性，後敘述栽培原理以及技術、收穫、調製及貯藏。台灣地區稻作機械化之展望。

222080 Rice Science 2 S , F

In this course, the importance, cultivation, origin, primitive variety, distribution, production and marketing of rice are introduced. Then, the morphology, physiology, characters of good varieties in Taiwan will also be discussed. The principles and techniques of cultivation, harvest, manufacture and storage will be introduced. The mechanization of rice production in Taiwan will be discussed.

222081 果樹生理 2 選 , 上

本課程主要以果樹的基本生理為中心，進而了解有利於果樹生產的各項生理因素為主。其目的，在了解各種生理機能與果樹生長生殖之關係，以求提高果樹栽培技術以獲得高品質之果實。講授內容影響果樹的環境生理要素、果樹構造及生產力、果樹矮化生理、果樹頂芽優勢及樹型、果樹的老化及果實的發育成熟及果皮蠟的形成生理，果樹的開花及休眠作用之生理現象等。

222081 Fruit Tree Physiology 2 S , F

The objective of this course is to discuss the physiological functions and the productive techniques of the fruit trees. The topics contain the requirement of fruit growing environments, the relation between fruit types and production, the effect of dwarfing and apical dominance, the fruit maturation during senescence, the metabolism of the peel wax formation. the differentiation of flower bud and the dormancy factors.

222082 肉品加工技術 2 選 , 下

本課程主要討論肉品加工之理論與應用，使學生對肉品加工有系統的了解。內容包括：肉品的醃漬、煙燻、乾燥、加熱、嫩化處理與肉品保存等。

222082 Meat Product Processing 2 S , S

The objective of this course is to discuss the theory and application technique in processing of meat products. It include meat curing、smoking、dry、cooking、tenderization and preservation methods .

222083 肉品加工技術實習 1 選 , 下

本課程配合肉品加工課程，使學生對肉品加工配方、加工與品質控制等有更深一層的認知。課程內容包括各式香腸製品，醃漬肉品，半乾式肉製品及肉品罐頭製作等。

222083 Practice of Meat Product Processing 1 S , S

The objective of this course is to give the students more confidence in meat products processing. It includes formula designation, processing and quality control of sausage, cured meat products, semidry meat products and canned meat etc.

222084 養殖經營與管理 2 選 , 下

本課程分成兩部份，第一部份為企業資金之經營運用，含有關養殖企業之經濟理論，成本結構，經營效果評估，生產計劃及投資計劃之擬定，帳目記錄方法以及銷售道之介紹，第二部份為養殖技術及產品品質之提升法，以建立品牌以因應進入 WTO 之衝擊為目的，含魚苗選擇及放養，養成技術及收成後品質之保持等技術。由此課目，學生可得到從事養殖企業之經營管理之知識。

222084 Aquaculture Business Management 2 S ,S

This course is divided into two parts. First part is about the capital management, which include basic concepts of aquaculture economies, cost-return analysis method, business management effect evaluation method, annual production and investment plan, cash flow chart and market channel. Second part introduce how to establish reputation for aquaculture product, which include good pre-stocking skill, good production and management skill and good post-harvest techniques. From this course, students will gain knowledge of aquaculture business management.

222085 觀賞魚養殖與管理 2 選 , 下

本課程介紹(1)目前台灣觀賞魚的養殖和繁殖、(2)水族造景和水草之管理、(3)水族器材、(4)水族箱之水質處理與管理和(5)水族箱之養殖管理

222085 Culture and Management of Ornamental Fish 2 S ,S

The course is comprised of (1)the artificial propagation and management of aquarium fish cultured in Taiwan、(2)aquarium design and management of aquarium plant、(3)Aquarium apparatus、(4)the process and control of water quality in aquarium and (5)the management of aquarium .

222086 觀賞魚養殖與管理實習 1 選 , 下

本實習介紹(1)目前台灣觀賞魚的養殖和繁殖、(2)水族造景和水草之管理、(3)水族器材、(4)水族箱之水質處理與管理和(5)水族箱之養殖管理

222086 Practice of Culture and Management of Ornamental Fish 1 S ,S

The practice is comprised of (1)the artificial propagation and management of aquarium fish cultured in Taiwan、(2)aquarium design and management of aquarium plant、(3)Aquarium apparatus、(4)the process and control of water quality in aquarium and (5)the management of aquarium .

222087 寵物飼養管理 2 選 , 上

本課程之授課內容包括：寵物種類來源、品種、繁殖與育種、營養、飼養與管理、畜舍和保定，以及保健。本課程所提供飼養寵物之相關常識，將有助於寵物飼養技術之提升。

222087 Pet Feeding and Management 2 S ,F

The purpose of this course provides the necessary information including origins, breeds, reproduction and breeding, nutrition, feeding and management, housing and handing, health care in pet animals. It is hoped that this study will serve as a guide for advanced in the field of pet feeding.

222088 乳品加工技術 2 選 , 上

本課程著重於乳製品之加工技術、加工原理、原料配合、品質管制及貯藏等。乳製品種類則涵蓋液乳、發酵乳、冰淇淋、乾酪、乳酪及乳油等。期使學生於乳品加工技術之操控更具信心。

222088 Dairy Product Processing 2 S ,F

The objective of this course is to give the students more confidence in processing theory and techniques of dairy products, formula designation, quality control and storage methods. The kinds of dairy products include liquid milks, ice cream, cheese, butter and cream etc.

222089 乳品加工技術實習 1 選 , 上
本實習配合乳品技術之課程內容，包括乳品成分微生物檢驗與液乳、發酵乳、冰淇淋、乾酪、乳油及乳酪之製造。期使學生熟悉乳品之製造，並對產品配、製程及品質之操控具信心。

222089 Practice of Dairy Product Processing 1 S , F
The objective of this course is to give students more confidence in formula, processing and quality control of dairy products. It includes the chemical, physical and microbial examination of dairy products, and manufacture of liquid milks, fermented milks, ice cream, cheese, cream and butter etc

222090 畜產品衛生與管理 2 選 , 上
本課程主要討論畜產品之品質管制與衛生，家畜健康對畜產品品質的關係。主要內容包括屠前家畜的處理，肉品工廠中肉品管理，肉品處理與肉品工廠清潔。集乳與授乳衛生，乳品一般處理及品質測定。

222090 Hygiene and Control of Animal Products 2 S , F
This course will discuss the quality control, sanitation and inspection of animal products, animal health in relation to the quality of animal products. The major chapter contents transportation and handling of livestock prior to slaughter, meat inspection, handling of meat, quality control of meat and meat plant cleaning, collection and reception of milk, general milk treatment, quality control of milk and milk products.

222091 畜產經營 2 選 , 上
使學生瞭解經營牧場之一般原則、原理與如何應用經濟原則及牧場經營有關業務期降低經營成本，提高利益，其內容包括牧場生產資源之利用、牧場經營之經濟原則、禽畜生產預估、畜產品運銷、生產業務之配合利用、牧場建築與設備、環境污染控制、以及自動化生產的方式評估。

222091 Livestock Production Management 2 S , F
To allow students to understand the general principles of managing animal production, and to know to apply the economic theories into the animal production with a view to decreasing production costs and increasing profits. This course is dealing with the utilization of animal production resources, the estimating of animal production, the marketing of animal products, the coordination of production business, the farm building and equipment and the control of environmental pollution。

222092 畜產經營實習 1 選 , 上
本課程係配合「畜產經營」課程而設，利用各類資料進行飼料需求量評估，飼養成本之概估經濟規模擬定，投資報酬之分析，市場供需資料之搜集及總生產成本與收益之計算與分析，同時練習計帳及熟悉相關簿記方法之應用，使學生有基本會計知識，而可作經營分析之工作。

222092 Practice of Livestock Production Management 1 S , F
The course is aid to match the purpose of the livestock. Production management. In this course, we use some kinds of data to estimate the requirement of feeds and the feeding cost, to set the economics of scale, to analyze the return of investment, to collect the data of market demands and

supplies, and to calculate total production cost and returns. At the same time, the course also makes students having basic knowledge in accounting and doing the job of operative analysis well by applying the methods of book.

222093 休閒漁業 2 選 , 上

內容包括休閒漁業的涵義，觀光魚市、漁村民宿、漁業文化博物館、傳統漁業作業、養殖場之旅、海上箱網休閒公園、休閒船釣、賞鯨等，另也介紹國外觀光休閒漁業的概況。

222093 Recreational Fisheries 2 S , F

This course covers recreational fish market, bed & breakfast in fish village, fishery culture museum, traditional fishery operation, fish farm tour, sea cages leisure park, sport fishing, and whale watching.

222094 雜草管理 1 選 , 上

本課程主要介紹雜草的認識、分類、鑑定、生理、生態及對作物、環境、人類的影響，進而說明草害管理的演變及主要管理技術。

222094 Weed Management 1 S , F

Several topics of weed management are included: how to identify weeds, classification, physiology, ecology, effects of weeds on crops, environment and human beings, the history of weed management and management techniques.

222095 雜草管理實習 1 選 , 上

本實習主要介紹認識雜草及雜草的生態相，進而了解各種雜草的管理技術包括生物性、化學性殺虫劑特性之介紹及應用。

222095 Practice of Weed Management 1 S , F

This is a practical course of weed management. The purposes are how to know weeds, ecological distribution, management techniques, biological and chemical controls.

222096 草坪管理 2 選 , 上

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、病虫害種類及其防治方法，均逐一說明。

222096 Turf Management 2 S , F

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. For the turf establishment and management, design, preparation, maintenance, pest management techniques will also be discussed.

222097 草坪管理實習 1 選 , 上

認識各類溫、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、管理、病虫害認知與防治等，並配合實地參觀以加深印象。

222097 Practice of Turf Management 1 S , F

The practical field culture and management techniques on turf will be conducted by students to know how to prepare turf sites, turfgrass propagation techniques, use of fertilizers, and pest control on our practice turf farm. Field trips to golf course and seminar on turf management will also be conducted.

222098 花卉利用 2 選 , 上

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：1．色彩學原理、2．色彩效果與應用、3．插花史及花藝設計、4．東西方插花方式、5．花材處理方法、6．花卉加工—押花及乾燥花、7．組合盆栽設計原則、8．組合盆栽之應用、9．室內植栽設計與應用

222098 Flower Design and Decoration 2 S , F

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, interior landsplanting.

222099 花卉利用實習 1 選 , 上

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：1．乾燥花栽培及製作、2．東方式花藝設計、3．西洋式花藝設計、4．花束、花圈及胸花製作、5．押花製作、6．花卉禮品包裝、7．組合盆栽設計與應用。

222099 Practice of Flower Design and Decoration 1 S , F

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, container garden techniques.

222101 蘭花栽培 2 選 , 上

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、蘭棚之建造、蘭花的利用等。各論包括各主要蘭花如嘉得利亞蘭、蝴蝶蘭、石斛蘭、萬代蘭、蕙蘭等之品種、繁殖方法、及栽培管理技術。

222101 Orchid Culture 2 S , F

This course is to introduce the knowledge and techniques of orchid culture for students, including general and specific aspects. In general aspect, classification, growth characters, cultural environment, propagation method, disease control, greenhouse building and utilization of orchids are discussed. In specific topics, Cattleya, Phalaenopsis, Dendrobium, Vanda, etc., are introduced on their varieties, propagation and cultural techniques.

222102 蘭花栽培實習 1 選 , 上

研習蘭棚(養蘭室)之建造，各主要蘭如蝴蝶蘭、洋蘭、石斛蘭、萬代蘭、蕙蘭等之繁殖方法、肥培管理、病蟲害防治、育種技術等。訓練學生對從事蘭花栽培及生產更具信心。

222102 Practice of Orchid Culture 1 S , F

This course introduces the cultural techniques of different orchids, including Phalaenopsis, Cattleya, Dendrobium, Vanda and Chinese native orchids. The propagation, fertilizer management, disease control, breeding and technique of building orchid greenhouse are also discussed in detail in the class.

222103 作物生產概論 2 選 , 上

本課程針對作物分佈,作物形態、作物栽培技術(包括作物栽培方法、栽培制度、產量、品質、永續性農業等)、作物改良、環境等與作物生產關係,做一完整系統敘述,使學生瞭解作物之生產方法及方向。

222103 Introduction to Crop Production 2 S , F

This is the basic course on crop culture which intends to introduce the crop culture distribution, morphology, culture techniques (include culture method, system, production quality and sustainable agriculture etc), crop improvement, crop growth production and environmental factors relationships.

222104 畜產企業管理 2 選 , 下

本課程乃系統性地介紹畜產企業經理人應具備之技能,包括:(1) 畜產企業管理學內涵、(2) 畜產企業經營規劃與決策、(3) 資料收集與分析、(4) 預測方法、(5) 畜產企業產品生產與規劃、(6) 畜產企業資金與預算、(7) 畜產企業成本與收益觀念、(8) 不同評價之成本項目與效益分析、(9) 畜產企業行銷、(10) 畜產企業政策與環保問題(11) 畜產企業組織、(12) 人力資源、(13) 畜產企業控制原則、(14) 畜產企業經營目標之設計

222104 Livestock Business Management 2 S , S

This course gives a systematic knowledge for livestock business manager. It includes as follows: The contents as livestock business, planning and decision, information collection and analysis, forecasting, products and production planning, capital and budget, cost and revenue, cost evaluation and benefit analysis, livestock business marketing, policy and ecosystem protection, livestock business organization, manpower resources, controlling, management indicators.

222105 水產養殖自動化 2 選 , 下

本課程介紹養殖漁業自動化的基本理念,內容涵蓋養殖環境、繁殖作業、養殖用水處理、箱網養殖作業、投餌、收穫與分級等方面之自動化。

222105 Aquaculture Automation 2 S , S

This course provides the automation in monitoring and control of the environment, propagation practices, waste water treatment, cage culture operation, feeding, and harvesting and grading.

222106 特藥用作物之利用 2 選 , 下

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。

222106 Utilization of Special and Medicinal Crops 2 S , S

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.

222107 特藥用作物之利用實習 1 選 , 下

配合課程講授進度,作特、藥用作物之利用技術實習。

222107 Practice of Utilization of Special and Medicinal Crops 1 S , S

The course is to offer practical operation techniques on special/medicinal crops.

222108 花卉產業的發展與經營 2 選 , 下

花卉的市場與消費通常緊跟著當地國民經濟收入的成長與生活品質的提升而增加,因此近

年來在台灣農產企業中花卉成為成長率最高的產業，同時由於國際貿易的自由化，以及消費者對花卉品種與品質的更大需求，花卉亦成為最國際化的農產企業，花卉本身是單位面積產值最高的作物，同時其產品在市場上的附加價值亦由於生產者及經銷者的應用力與創新力而有很大的空間，基於花卉是高價值，高科技，高精緻度的產業，因此世界上大部份的產業還是由歐、美、日等已開發國家所掌握，這門課將包括花卉的種類，產業的範圍以及其發展與管理的基本觀念與條件，希望這門課對有志於從事花卉產業的學生有所助益。

222108 Development and Management of Ornamental Business 2 S ,S

Ornamental business is one of the fastest growing businesses in agriculture. It has been growing along with economic development and up grading of the living standard in the territory. Recently, it has also become a significant international business due to enhancement of free trade policy and quality requirements from consumer needs. The ornamental business usually produces more income per acre than any other crops and adds value to product based on creativity and innovation. Without exception, the ornamental business currently is still dominated by the country which is well developed in research, production, marketing and management. The course will cover floral crops, industry overview, basic concepts and requirements for development and management. It is anticipated to be valuable for students into the carrer.

222109 行銷學 3 選 ,下

本課程旨在瞭解滿足社會各階層對商品或勞務需求所做的研究、分析、預測、產品發展、訂價、推廣、交易及實體配銷等系列的人類活動。包括：(1) 行銷之基本觀念、(2) 行銷體系與行銷環境、(3) 策略性行銷規劃與行銷管理、(4) 各種市場與購買者行為分析、(5) 市場需要之測定與市場區隔、(6) 產品決策、(7) 價格決策、(8) 溝通與促銷組合決策、(9) 通路決策

222109 Marketing 3 S ,S

The major goal of this course is to understand a series of human action about all social stratification by making study, forecasting, product development, pricing, promotion, trade and physical distribution to satisfy needs of goods and services.

It includes: The concept of marketing, the marketing environment, strategic marketing planning and management, different kind of markets and consumer behavior analysis, market demand forecasting and segmenting, product decision, pricing decision, communication and promotion mix decision, place decision.

222110 應用農藥學 2 選 ,下

農藥為作物生產上不可缺少的工具，本課程將介紹農藥特性、類別、毒性、作用機制、噴藥器具,對人畜、作物及環境的影響，農藥管理的組織及法規亦在討論範圍內。

222110 Pesticide Application 2 S ,S

Pesticides are essential tool in food production. This course will supply the necessary information about the property, classification, toxicity and mode of action of major pesticides. In addition, the pesticide application equipment, the effects on human and environment and pesticide regulations will also be discussed.

222111 食用菌栽培 2 選 ,下

食用菌種類繁多，也是現代健康食品的重要成員。本課程的目的在於介紹食用菌的種類，分佈，栽培方法及利用等。希望從多重角度加深同學們對食用菌的了解。

222111 Cultivation of Edible Fungi 2 S ,S

There are various kinds of edible fungi of which becoming more important in modern recipe. The aims of this course sets on introducing edible fungi from different aspects ,included distribution,

cultivation and ways of usage etc..

222112 食用菌栽培實習 1 選 , 下

配合正課的內容，除就本地常見食用菌提供同學練習栽培外，也配合以幻燈片及網路資源等，讓同學們了解食用菌廣泛的種類及分佈等。

222112 Practice of Cultivation of Edible Fungi 1 S , S

The purposes of this lab are sets on introducing students with a few protocol on cultivating edible fungi, especially locally commercialized kinds of edible fungi.

222113 作物生產概論 2 選 , 上

本課程針對作物分佈、作物形態、作物栽培技術（包括作物栽培方法、栽培制度、產量、品質、永續性農業）、作物改良、環境等與作物生產關係，做一完整系統敘述，使學生瞭解作物之生產方治及方向。

222113 Introduction to Crop Production 2 S , F

This course focuses on crop culture which intends to introduce the crop culture distribution, morphology, culture techniques (include culture method, system, production, quality and sustainable agriculture etc.), crop improvement, crop growth production and environmental factors relationships.

熱帶農業暨國際合作系碩士班

(一)教育目標

1. 培育熱帶農業及國際農業專業人才。
2. 促進農、林、漁、牧各方面之相關研究。
3. 培育高級專業人才，增進獨立研究能力。
4. 提升農、林、養殖及畜牧業之專業技術。
5. 協助政府培訓援助友邦的農業技術人才。

(二)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	
專題討論 Seminar	4	1	1	1	1	
碩士論文 Thesis	6			3	3	
應用華語(一) Applied Mandarin (I)	1	1				外籍生必修,1學分2 小時
應用華語(二) Applied Mandarin (II)	1		1			外籍生必修,1學分2 小時
農業發展與國際合作特論 Special Topics on Agricultural Development and International Cooperation	2		2			熱帶農業暨國際合作系
永續農業發展與規劃 Development and planning in Sustainable Agriculture	2				2	熱帶農業暨國際合作系
合 計	14	1	3	4	6	本 國 生
	16	2	4	4	6	外 籍 生

(三)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	
第二外語(西班牙文或法語) Second Foreign Language (Spanish or French)	4	1	1	1	1	共同
第二外語(日文二) Second Foreign Language (Japanese)	2		2			共同
高等英文 Advanced English	0	0				共同
初級中文 Introductory Chinese (1)	0	0	0	0	0	通識中心
高級中文 Advanced Chinese	0	0	0	0	0	通識中心
科學研究方法 Scientific Research Methods	2		2			熱帶農業暨國際合作系
農業研究方法與試驗設計 Agricultural Research Methods and Experiment Design	3	3				熱帶農業暨國際合作系
試驗設計及數據分析 Experimental Design and Data Analysis	2	2				熱帶農業暨國際合作系
高等昆蟲學 Advanced Entomology	2	2				熱帶農業暨國際合作系
植物保護與永續農業 Plant Protection in Sustainable Agriculture	2	2				熱帶農業暨國際合作系
農企業管理特論 Special Topics on Agribusiness Management	3	3				熱帶農業暨國際合作系
行銷管理特論 Special Topics on Marketing Management	3		3			熱帶農業暨國際合作系
害蟲化學生態 Chemical Ecology of Insect Pests	2	2				熱帶農業暨國際合作系
永續發展(通識課程) General course of sustainable development	2	2				熱帶農業暨國際合作系
免疫學概論 General Immunology	3	3				熱帶農業暨國際合作系
統計取樣法 Sampling Methods	2		2			熱帶農業暨國際合作系
全球研討會 Global Seminar	3	3				熱帶農業暨國際合作系

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
電顯技術 Electron Microscopy	2		2			熱帶農業暨國際合作系
電顯技術實驗 Electron Microscopy Lab.	1		1			熱帶農業暨國際合作系
專題研究 Special Research Project	2	1	1			熱帶農業暨國際合作系
熱帶農業生態 Tropical Agriculture Ecology	2		2			熱帶農業暨國際合作系
高等作物育種學 Advanced Crop Breeding	2		2			熱帶農業暨國際合作系
植物環控生理學 Controlled Environment Plant Physiology	3		3			熱帶農業暨國際合作系
個體經濟特論 Special Topics on Microeconomics	3			3		熱帶農業暨國際合作系
農業發展核心競爭力策略規劃 Competitive Strategy and Core Planning in Agricultural Development	2				2	熱帶農業暨國際合作系
熱帶作物害蟲管理特論 Special Topics on Tropical Crop Pest Management	3		3			熱帶農業暨國際合作系
生物防治特論 Special Topics on Biological Control	2		2			熱帶農業暨國際合作系
植物生態學特論 Special Topics on Plant Ecology	2		2			熱帶農業暨國際合作系
植物化學生態學 Phytochemical Ecology	2		2			熱帶農業暨國際合作系
細胞遺傳學 Cytogenetics	2		2			熱帶農業暨國際合作系
國際漁業合作特論 Special Topics on International Fishery Cooperation	2		2			熱帶農業暨國際合作系
系統分析 System Analysis	3			3		熱帶農業暨國際合作系
高等植物營養學 Advanced Plant Nutrition	3			3		熱帶農業暨國際合作系
社會昆蟲學特論 Special Topics on Social Insects	2			2		熱帶農業暨國際合作系
社會昆蟲學特論實驗 Special Topics on Social Insects Lab.	1			1		熱帶農業暨國際合作系

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
昆蟲行為學特論 Special Topics on Insect Behavior	2			2		熱帶農業暨國際合作系
農業技術轉移 Agriculture Technology Transfers	3				3	熱帶農業暨國際合作系
綜合害蟲管理特論 Special Topics on Integrated Pest Management	3			3		熱帶農業暨國際合作系
高等植物組織培養學 Advanced Plant Tissue Culture Techniques	3	3				熱帶農業暨國際合作系
天然物特論 Special Topics on Nature Products	2			2		熱帶農業暨國際合作系
林產特論 Special Topics on Forest Products	2			2		熱帶農業暨國際合作系
木材微生物學 Wood Microbiology	3		3			熱帶農業暨國際合作系
種子科學與技術 Seed Science and Technology	2			2		熱帶農業暨國際合作系
草坪生理與管理 Turf Physiology and Management	2			2		熱帶農業暨國際合作系
分子生物學 Molecular Biology	2		2			熱帶農業暨國際合作系
家禽學特論 Special Topics on Poultry Management	2		2			熱帶農業暨國際合作系
乳牛學特論 Special Topics on Dairy Cattle Management	2		2			熱帶農業暨國際合作系
生物技術研究法 Biotechnology Laboratory	3	3				生物科技研究所
動物細胞培養 Animal Cell Culture	2			2		生物科技研究所
動物胚胎幹細胞建立與應用特論 Special Topics on Application and Establishment of Embryonic Stem Cells	2	2				生物科技研究所
作物學特論 Advanced Crop Science	2	2				農園生產系
作物營養管理與診斷技術 Group Nutrition Management and Diagnostic Techniques	2	2				農園生產系

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
作物營養管理與診斷技術實驗 Crop Nutrition Management and Diagnostic Techniques Lab.	1	1				農園生產系
植物組織構造與功能專論 Special Topics on the Structures and Functions of Plant Tissues	2		2			農園生產系
熱帶作物生理學 Tropical Crop Physiology	2		2			農園生產系
植物逆境生理 Stress Physiology of Plants	2		2			農園生產系
植物生物化學 Plant Biochemistry	2		2			農園生產系
應用分子生物學 Applied Molecular Biology	3		3			農園生產系
農業生物技術 Agricultural Biotechnology	3		3			農園生產系
數量遺傳學 Quantitative Genetics	2			2		農園生產系
果樹生理特論 Special Topics on Fruit Crop Physiology	2			2		農園生產系
高等果樹學 Advanced Pomology	2			2		農園生產系
高等蔬菜學 Advanced Olericulture	2			2		農園生產系
高等花卉學 Advanced Floriculture	2			2		農園生產系
高等園產品處理 Advanced Horticultural Product Handling	2			2		農園生產系
綜合蔬菜生產 Integrated Vegetable Production	4			4		農園生產系
地理資訊系統特論 Special Topics on Geographic Information Systems	2	2				森林系
地理資訊系統特論實習 Practice of Special Topics on Geographic Information Systems	1	1				森林系

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
林木生態生理學特論 Special Topics on Ecophysiology of Wood Plants	2		2			森林系
林木生態生理學特論實習 Practice of Special Topics on Ecophysiology of Wood Plants	1		1			森林系
遊憩與觀光之理論基礎 Foundations of Recreation and Leisure Studies	3		3			森林系
休閒研究方法論 Research Methods in Leisure Studies	3		3			森林系
森林生態學特論 Forest Ecology	2		2			森林系
森林生態學實習 Practice of Forest Ecology	1		1			森林系
飼料生物培養技術特論 Special Topics on Live Feed Cultivation	2	2				水產養殖系
軟體動物養殖特論 Special Topics on Mollusk Culture	2	2				水產養殖系
魚類學特論 Special Topics on Ichthyology	2	2				水產養殖系
新魚種養殖特論 Special Topics on New Fish Species Culture	2	2				水產養殖系
分子生物學特論 Special Topics on Molecular Biology	2	2				水產養殖系
魚池構築技術特論 Special Topics on Fish Pond Construction	2	2				水產養殖系
甲殼類生理學特論 Special Topics on Crustacean Physiology	3	3				水產養殖系
海洋生態特論 Special Topics on Marine Ecology	3	3				水產養殖系
無脊椎動物免疫學 Invertebrate Immunology	3	3				水產養殖系
酵素利用技術特論 Special Topics on Enzyme Utilization	2		2			水產養殖系
自動化養殖特論 Special Topics on Aquaculture Automation	2		2			水產養殖系

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
海洋生物技術特論 Special Topics on Marine Biotechnology	2		2			水產養殖系
循環水養殖技術特論 Special Topics on Aquaculture with Re-Circulatory System	2		2			水產養殖系
水產經營與管理特論 Special Topics on Aquaculture Management	2		2			水產養殖系
池塘管理技術特論 Special Topics on Fish Pond Management	2		2			水產養殖系
家畜營養生理 Animal Nutritional Physiology	2	2				畜產系
草食動物營養特論 Special Topics on Nutrition for Herbivores	2	2				畜產系
高環境溫度與禽畜生產 High Temperature and Animal Production	2	2				畜產系
實用畜產自動化特論 Special Topics on Application of Animal Products Automation	2	2				畜產系
熱帶畜牧特論 Special Topics on Tropical Livestock Production	2	2				畜產系
畜產污染防治與資源利用 Livestock Pollution Control and Resource Utilization	2	2				畜產系
畜舍策劃特論 Special Topics on Animal House Arrangement	2	2				畜產系
細胞生物學特論 Advanced Cell Biology	2	2				畜產系
家畜繁殖管理特論 Special Topics on Livestock Reproductive Management	2	2				畜產系
生殖技術特論 Special Topics on Reproductive Technology	2		2			畜產系
應用動物育種技術 Applied Animal Breeding Technology	2		2			畜產系
牛應用行為學 Applied Cattle Behavior	2		2			畜產系

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
乳品加工特論 Special Topics on Milk Products Processing	2		2			畜產系
肉品加工特論 Special Topics on Meat Products Processing	2		2			畜產系
動物代謝調節 Animal Metabolic Regulation	2		2			畜產系
飼料技術特論 Special Topics on Feed Manufacture Technology	2		2			畜產系
安全畜產品生產特論 Special Topics on Safe Animal Production	2		2			畜產系
動物行為和福利 Animal Behavior and Welfare	2			2		畜產系
蛋品加工特論 Special Topics on Egg Product Processing	2			2		畜產系
泌乳生理學 Physiology of Lactation	2			2		畜產系
數量遺傳與動物模式論 Quantitative Genetics and Animal Model Methodology	2			2		畜產系
禽畜副產物利用 Utilization of Animal and Poultry Byproducts	2				2	畜產系
動物基因轉殖特論 Special Topics on Animal Transgenics	2				2	畜產系
蟎蟬學特論 Special Topics on Acarology	2	2				植物醫學系
植物病原學特論 Special Topics on Plant Pathogen	2	2				植物醫學系
植物病害防治特論 Special Topics on Plant Diseases Control	2	2				植物醫學系
植物病害防治特論實驗 Lab. of Special Topics on Plant Diseases Control	1	1				植物醫學系

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
植物流行病學 Plant Disease Epidemiology	2		2			植物醫學系
土壤傳播病害 Soil-Borne Disease	2		2			植物醫學系
種子傳播病害 Seed-Borne Disease	2		2			植物醫學系
高等植物病理學 Advanced Plant Pathology	2		2			植物醫學系
熱帶植物病害特論 Special Topics on Tropical Plant Diseases	2		2			植物醫學系
熱帶植物蟲害特論 Special Topics on Tropical Insect Pests	2		2			植物醫學系
血清學技術 Serology	2		2			植物醫學系
血清學技術實驗 Serology Lab.	1		1			植物醫學系
昆蟲生態特論 Special Topics on Insect Ecology	2		2			植物醫學系
分子生物學在植保上之應用 Application of Molecular Biology in Plant Protection	2			2		植物醫學系
農藥學特論 Special Topics on Pesticides	2			2		植物醫學系
植物害蟲鑑定與檢疫技術 Identification and Quarantine of Insect Pests	2			2		植物醫學系
植物病害診斷與檢疫技術 Diagnosis and Quarantine of Plant Diseases	2			2		植物醫學系
生物技術特論 Special Topics on Biotechnology	2			2		植物醫學系
植物病毒學特論 Special Topics on Plant Virology	2			2		植物醫學系
植物病態生理學 Physiological Plant Pathology	2			2		植物醫學系
藥理學特論 Special Topics on Pharmacology	2		2			獸醫學系

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
魚病臨床微生物學 Clinical Microbiology for Fish Disease	2		2			獸醫學系
訊息傳遞 Signal Transduction	2		2			獸醫學系
分子病毒學 Molecular Virology	2	2				獸醫學系
基因調控 Gene Regulation	2	2				獸醫學系
食品科技研究法 Methodology for Food Research	3	3				食品科學系
高等食品化學 Advanced Food Chemistry	3		3			食品科學系
應用微生物學 Applied Microbiology	3			3		食品科學系
食品生化特論 Advanced Food Biochemistry	2		2			食品科學系
食品製程之自動控制 Automatic Control in Food Processing	3		3			食品科學系
食品經營特論 Advanced Food Management	2		2			食品科學系
最適化在食品科技之應用 Optimization in Food Science and Technology	3		3			食品科學系
微生物生理與代謝 Microbial Physiology and Metabolism	3		3			食品科學系
生化工程 Biochemical Engineering	2			2		食品科學系
高等食品工程 Advanced Food Engineering	3		3			食品科學系
高等食品加工 Advanced Food Processing	2	2				食品科學系
作物需水量 Crop Water Requirements	3			3		土木系
灌溉方法 Irrigation Methods	3			3		土木系
排水工程 Drainage	3			3		土木系

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
農業研究資訊 Agricultural Research Information	2	2				水土保持系
農企業財務管理 Financial Management of Agribusiness	3		3			農企業管理系
農企業人力資源管理 Human Resources Management of Agribusiness	3		3			農企業管理系
園藝產品經營 Seminar on Managing Agribusiness of Horticultural Products	3		3			農企業管理系
農企業投資分析 Agribusiness Investment Analysis	3		3			農企業管理系
溝通技巧 Communication Skills	3				3	農企業管理系
區域經濟與政策分析 Regional Economics and Policy Analysis	2		2			農企業管理系
農民組織 Farmer's Organization	2			2		農企業管理系
中國園林藝術特論 Special Topics on Chinese Garden Arts.	3		3			景觀暨遊憩管理研究所
文化景觀特論 Special Topics on Culture Landscape	3		3			景觀暨遊憩管理研究所
景觀建築與風水特論 Special Topics on Landscape Architecture and Feng-Shui	3			3		景觀暨遊憩管理研究所
比較園林學特論 Special Topics on Comparison of Oriental and European Gardens	3			3		景觀暨遊憩管理研究所
中國園林與文化特論 Special Topics on Chinese Garden and Culture	3				3	景觀暨遊憩管理研究所
中國園林哲學特論 Special Topics on Chinese Garden Philosophy	3				3	景觀暨遊憩管理研究所
造園設計特論 Special Topics on landscape Design	3	3				景觀暨遊憩管理研究所

中文科目名稱 英	學分數	第一學年		第二學年		備註
		上	下	上	下	
景觀規劃特論 Special Topics on Landscape Planning	3	3				景觀暨遊憩管理研究所
景觀植栽 Landscape Plantation	2	2				景觀暨遊憩管理研究所
土地開發與管制 Land Development and Control	3	3				景觀暨遊憩管理研究所
休閒農業 Leisure Farm Management	3	3				景觀暨遊憩管理研究所
農產利用 Agricultural Product Utilization	2		2			景觀暨遊憩管理研究所
農園水土與保持 Water and Soil Conservation on Farm	2		2			景觀暨遊憩管理研究所
生態環境規劃 Ecological Environment Planning	3		3			景觀暨遊憩管理研究所
合 計 Total	384	111	166	88	19	

*附註:本系選修課程包含全校碩士班選修課。

國立屏東科技大學 熱帶農業暨國際合作系 碩士班課程規劃表

學年	第一學年				第二學年				學分總計
學期	第一學期		第二學期		第一學期		第二學期		
修別	科目	學分	科目	學分	科目	學分	科目	學分	
必修	專題討論 應用華語(一)--外籍生	1 1	專題討論 應用華語(二)--外籍生 農業發展與國際合作特論	1 1 2	專題討論 碩士論文	1 3	專題討論 碩士論文 永續農業發展與規劃	1 3 2	
小計	外籍生 本國生	2 1	外籍生 本國生	4 3		4		6	16
選修	第二外語(西班牙文或法語) 高等英文 初級中文 高級中文 農業研究方法與試驗設計 試驗設計及數據分析 高等昆蟲學 植物保護與永續農業 農企業管理特論 害蟲化學生態 永續發展(通識課程) 免疫學概論 全球研討會 專題研究 高等植物組織培養學 生物技術研究法	1 0 0 0 3 2 2 3 2 2 3 2 3 3 1 3 3 3	第二外語(西班牙文或法語) 第二外語(日文二) 初級中文 高級中文 科學研究方法 行銷管理特論 統計取樣法 電顯技術 電顯技術實驗 專題研究 熱帶農業生態 高等作物育種學 植物環控生理學 熱帶作物害蟲管理特論 生物防治特論 植物生態學特論	1 2 0 0 2 3 2 1 1 2 2 3 2 3 2 2 2	第二外語(西班牙文或法語) 初級中文 高級中文 個體經濟特論 系統分析 高等植物營養學 社會昆蟲學特論 社會昆蟲學特論實驗 昆蟲行為學特論 綜合害蟲管理特論 天然物特論 林產特論 種子科學與技術 草坪生理與管理 動物細胞培養 數量遺傳學	1 0 0 3 3 2 1 2 3 2 2 3 2 2 2 2	第二外語(西班牙文或法語) 初級中文 高級中文 農業發展核心競爭力策略規劃 農業技術轉移 禽畜副產物利用 動物基因轉殖特論 溝通技巧 中國園林與文化特論 中國園林哲學特論	1 0 0 2 3 2 3 2 3 2 2 2 2 2 2 2	
小計		30		28		30		19	107

國立屏東科技大學 熱帶農業暨國際合作系 碩士班課程規劃表

學年	第一學年		第二學年		第一學年		第二學年		學分總計	
學期	第一學期	第二學期	第一學期	第二學期	第一學期	第二學期	第一學期	第二學期		
修別	科目	學分	科目	學分	科目	學分	科目	學分		
選	動物胚胎幹細胞建立與應用特論	2	植物化學生態學	2	果樹生理特論	2				
	作物學特論	2	細胞遺傳學	2	高等果樹學	2				
	作物營養管理與診斷技術	2	國際漁業合作特論	2	高等蔬菜學	2				
	作物營養管理與診斷技術實驗	1	木材微生物學	3	高等花卉學	2				
	地理資訊系統特論	2	分子生物學	2	高等園產品處理	2				
	地理資訊系統特論實習	1	家禽學特論	2	綜合蔬菜生產	4				
	飼料生物培養技術特論	2	乳牛學特論	2	動物行為和福利	2				
	軟體動物養殖特論	2	植物組織構造與功能專論	2	蛋品加工特論	2				
	魚類學特論	2	熱帶作物生理學	2	泌乳生理學	2				
	新魚種養殖特論	2	植物逆境生理	2	數量遺傳與動物模式論	2				
	分子生物學特論	2	植物生物化學	2	分子生物學在植保上之應用	2				
	魚池構築技術特論	3	應用分子生物學	3	農藥學特論	2				
	甲殼類生理學特論	3	農業生物技術	3	植物害蟲鑑定與檢疫技術	2				
	海洋生態特論	2	林木生態生理學特論	2	植物病害診斷與檢疫技術	2				
	無脊椎動物免疫學	2	林木生態生理學特論實習	1	生物技術特論	2				
	家畜營養生理	2	遊憩與觀光之理論基礎	3	植物病毒學特論	3				
	草食動物營養特論	2	休閒研究方法論	3	植物病態生理學	2				
	高環境溫度與禽畜生產	2	森林生態學特論	2	應用微生物學	3				
	實用畜產自動化特論	2	森林生態學實習	1	生化工程	3				
	熱帶畜牧特論	2	酵素利用技術特論	2	作物需水量	3				
	畜產污染防治與資源利用		自動化養殖特論	2	灌溉方法					
	畜舍策劃特論		海洋生物技術特論	2	排水工程					
	小計		45		47		50			142

國立屏東科技大學 熱帶農業暨國際合作系 碩士班課程規劃表

學年	第一學年				第二學年				學分總計
學期	第一學期		第二學期		第一學期		第二學期		
修別	科目	學分	科目	學分	科目	學分	科目	學分	
選	細胞生物學特論	2	循環水養殖技術特論	2	農民組織	2			
	家畜繁殖管理特論	2	水產經營與管理特論	2	景觀建築與風水特論	3			
	蝨蟎學特論	2	池塘管理技術特論	2	比較園林學特論	3			
	植物病原學特論	2	生殖技術特論	2					
	植物病害防治特論	2	應用動物育種技術	2					
	植物病害防治特論實驗	1	牛應用行為學	2					
	分子病毒學	2	乳品加工特論	2					
	基因調控	3	肉品加工特論	2					
	食品科技研究法	2	動物代謝調節	2					
	高等食品加工	2	飼料技術特論	2					
	農業研究資訊	3	安全畜產品生產特論	2					
	造園設計特論	3	植物流行病學	2					
	景觀規劃特論	2	土壤傳播病害	2					
	景觀植栽	3	種子傳播病害	2					
	土地開發與管制	3	高等植物病理學	2					
	休閒農業		熱帶植物病害特論	2					
			熱帶植物蟲害特論	1					
			血清學技術	2					
			血清學技術實驗	2					
			昆蟲生態特論	2					
		藥理學特論							
		魚病臨床微生物學							
小計		36		43		8		87	

國立屏東科技大學 熱帶農業暨國際合作系 碩士班課程規劃表

學年	第一學年				第二學年				學分總計
學期	第一學期		第二學期		第一學期		第二學期		
修別	科目	學分	科目	學分	科目	學分	科目	學分	
選			訊息傳遞	2					
			高等食品化學	3					
			食品生化特論	2					
			食品製程之自動控制	3					
			食品經營特論	2					
			食品經營特論	3					
			最適化在食品科技之應用	3					
			微生物生理與代謝	3					
			高等食品工程	3					
			農企業財務管理	3					
			農企業人力資源管理	3					
			園藝產品經營	3					
			農企業投資分析	2					
			區域經濟與政策分析	3					
			中國園林藝術特論	3					
			中國園林藝術特論	2					
			文化景觀特論	2					
			農產利用	2					
			農產利用	3					
修			農園水土與保持						
			生態環境規劃						
小計				48				48	

註：本系學生至少應修滿 30 學分始得畢業(其中本國生必修應修 10 學分，選修應修 20 學分)

(外籍生必修應修 12 學分，選修應修 18 學分)

熱帶農業暨國際合作系

Department of Tropical Agriculture and International Cooperation

課程代號 Course Number	科目名稱(中文) Course (Chinese)	學分 Credit	科目名稱(英文) Course (English)	頁次 Page
專業必修科目 Required Courses				
226001	專題討論	4	Seminar	
226002	碩士論文	6	Thesis	
專業選修科目 Elective Courses				
226006	初級中文	0	Introductory Chinese	
226007	農業研究資訊	2	Agricultural Research Information	
226008	試驗設計及數據分析	2	Experimental Design and Data Analysis	
226009	熱帶農業生態	2	Tropical Agriculture Ecology	
226010	農業發展與國際合作	4	Agricultural Development and International Cooperation	
226011	系統分析	3	System Analysis	
226012	技術轉移	3	Technology Transfers	
226013	專題研究	2	Special Research Project	
226014	高等作物育種學	2	Advanced Crop Breeding	
226015	高等植物營養學	2	Advanced Plant Nutrition	
226016	高等植物營養學實驗	1	Advanced Plant Nutrition Lab.	
226017	環控植物生理學	3	Controlled Environment Plant Physiology	
226018	個體經濟學特論	3	Special Topics on Microeconomics	
226019	社會昆蟲學特論	2	Special Topics on Social Insects	
226020	社會昆蟲學特論實驗	1	Special Topics on Social Insects Lab.	
226022	高等昆蟲學	2	Advanced Entomology	
226023	植物保護與永續農業	2	Plant Protection in Sustainable Agriculture	
226024	生物防治特論	2	Special Topics on Biological Control	
226025	昆蟲行為學特論	2	Special Topics on Insect Behavior	
226026	農企業管理特論	3	Special Topics on Agribusiness Management	
226027	論文寫作	2	Thesis Writing	
226028	行銷管理特論	3	Special Topics on Marketing Management	
226030	害蟲化學生態	2	Chemical Ecology of Insect Pests	
226031	植物生態學特論	2	Special Topics on Plant Ecology	
226032	植物化學生態學	2	Phytochemical Ecology	
226033	永續發展(通識課程)	2	General Course of Sustainable Development	
226034	細胞遺傳學	2	Cytogenetics	
226035	數量遺傳學	2	Quantitative Genetics	
226036	應用微生物學	3	Applied Microbiology	
226037	植物組織構造與功能專論	2	Special Topics on the Structures and Functions of Plant Tissues	

課程代號 Course Number	科目名稱(中文) Course (Chinese)	學分 Credit	科目名稱(英文) Course (English)	頁次 Page
專業選修科目 Elective Courses				
226038	作物學特論	2	Advanced Crop Science	
226039	種子生理學	2	Seed Physiology	
226040	作物營養管理與診斷技術	2	Crop Nutrition Management and Diagnostic Techniques	
226041	作物營養管理與診斷技術實驗	1	Crop Nutrition Management and Diagnostic Techniques Lab.	
226042	熱帶作物生理學	2	Tropical Crop Physiology	
226043	植物逆境生理	2	Stress Physiology of Plants	
226044	植物生物化學	2	Plant Biochemistry	
226045	果樹生理特論	2	Special Topics on Fruit Crop Physiology	
226046	高等果樹學	2	Advanced Pomology	
226047	高等蔬菜學	2	Advanced Olericulture	
226048	高等花卉學	2	Advanced Floriculture	
226049	高等園產品處理	2	Advanced Horticultural Product Handling	
226050	應用分子生物學	3	Applied Molecular Biology	
226051	農業生物技術	3	Agricultural Biotechnology	
226054	綜合蔬菜生產	4	Integrated Vegetable Production	
226055	電顯技術	2	Electron Microscopy	
226056	電顯技術實驗	1	Electron Microscopy Lab.	
226057	螨蟬學特論	2	Special Topics on Acarology	
226058	植物病原學特論	2	Special Topics on Plant Pathogen	
226059	植物流行病學	2	Plant Disease Epidemiology	
226060	土壤傳播病害	2	Soil-Borne Disease	
226061	種子傳播病害	2	Seed-Borne Disease	
226062	高等植物病理學	2	Advanced Plant Pathology	
226063	熱帶植物病害特論	2	Special Topics on Tropical Plant Diseases	
226064	熱帶植物蟲害特論	2	Special Topics on Tropical Insect Pests	
226065	血清學技術	2	Serology	
226066	血清學技術實驗	1	Serology Lab.	
226067	昆蟲生態特論	2	Special Topics on Insect Ecology	
226068	分子生物學在植保上之應用	2	Application of Molecular Biology in Plant Protection	
226069	農藥學特論	2	Special Topics on Pesticides	
226070	植物害蟲鑑定與檢疫技術	2	Identification and Quarantine of Insect Pests	
226071	植物害蟲診斷與檢疫技術	2	Diagnosis and Quarantine of Plant Diseases	
226072	生物技術特論	2	Special Topics on Biotechnology	
226073	植物病毒學特論	2	Special Topics on Plant Virology	
226074	植物病態生理學	2	Physiological Plant Pathology	
226075	景觀植栽	2	Landscape Plantation	
226076	土地開發與管制	3	Land Development and Control	
226077	休閒農業	3	Leisure Farm Management	
226078	農產利用	2	Agricultural Product Utilization	
226079	農園水土與保持	2	Water and Soil Conservation on Farm	
課程代號	科目名稱(中文)	學分	科目名稱(英文)	頁次

Course Number	Course (Chinese)	Credit	Course (English)	Page
專業選修科目 Elective Courses				
226080	生態環境規劃	3	Ecological Environment Planning	
226081	造園設計特論	3	Special Topics on landscape Design	
226082	飼料生物培養技術特論	2	Special Topics on Live Feed Cultivation	
226083	軟體動物養殖特論	2	Special Topics on Mollusk Culture	
226084	魚類學特論	2	Special Topics on Ichthyology	
226085	新魚種養殖特論	2	Special Topics on New Fish Species Culture	
226086	分子生物學概論	2	Special Topics on Molecular Biology	
226087	漁池構築技術特論	2	Special Topics on Fish Pond Construction	
226088	甲殼類生理學特論	3	Special Topics on Crustacean Physiology	
226089	海洋生態特論	3	Speical Topics on Marine Ecology	
226090	無脊椎動物免疫學	3	Invertebrate Immunology	
226091	酵素利用技術特論	2	Special Topics on Enzyme Utilization	
226092	自動化養殖特論	2	Special Topics on Aquaculture Automation	
226093	海洋生物技術特論	2	Special Topics on Marine Biotechnology	
226094	循環水養殖技術特論	2	Special Topics on Aquaculture with Re-Circulatory System	
226095	水產經營與管理特論	2	Special Topics on Aquaculture Management	
226096	池塘管理技術特論	2	Special Topics on Fish Pond Management	
226097	家畜營養生理	2	Animal Nutritional Physiology	
226098	動物行為和福利	2	Animal Behavior and Welfare	
226099	熱帶畜牧特論	2	Special Topics on Tropical Livestock Production	
226100	草食動物營養特論	2	Special Topics on Nutrition for Herbivores	
226101	高環境溫度與禽畜生產	2	High Temperature and Animal Production	
226102	實用畜產自動化特論	2	Special Topics on Application of Animal Products Automation	
226103	生殖技術特論	2	Special Topics on Reproductive Technology	
226104	應用動物育種技術	2	Applied Animal Breeding Technology	
226105	家禽學特論	2	Special Topics on Poultry Management	
226226	乳牛學特論	2	Special Topics on Dairy Cattle Management	
226107	牛應用行為學	2	Applied Cattle Behavior	
226110	分子生物學	2	Molecular Biology	
226111	區域經濟與政策分析	2	Regional Economics and Policy Analysis	
226112	農企業財務管理	3	Financial Management of Agribusiness	
226113	農企人力資源管理	3	Human Resources Management of Agribusiness	
226114	園藝產品經營	3	Seminar on Managing Agribusiness of Horticultural Products	
226115	溝通技巧	3	Communication Skills	
226116	農企業投資分析	3	Agribusiness Investmetn Analysis	
226117	高等食品加工	2	Advanced Food Processing	
226118	高等食品化學	3	Advanced Food Chemistry	
226119	食品科技研究法	3	Methodology for Food Research	
226120	食品生化特論	2	Advanced Food Biochemistry	
226121	食品製程之自動控制	3	Automatic Control in Food Processing	
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專業選修科目 Elective Courses

226122	食品經營特論	2	Advanced Food Management
226123	最適化在食品科技之應用	3	Optimization in Food Science and Technology
226124	微生物生理與代謝	3	Microbial Physiology and Metabolism
226125	生化工程	2	Biochemical Engineering
226126	藥理學特論	2	Special Topics on Pharmacology
226127	分子病毒學	2	Molecular Virology
226128	魚病臨床微生物學	2	Clinical Microbiology for Fish Disease
226129	林木生態生理學特論	2	Special Topics on Ecophysiology of Wood Plants
226130	林木生態生理學特論實習	1	Practice of Special Topics on Ecophysiology of Wood Plants
226131	地理資訊系統特論	2	Special Topics on Geographic Information Systems
226132	地理資訊系統特論實習	1	Practice of Special Topics on Geographic Information Systems
226133	遊憩與觀光之理論基礎	3	Foundations of Recreation and Leisure Studies
226134	休閒研究方法論	3	Research Methods in Leisure Studies
226135	森林生態學特論	2	Forest Ecology
226136	森林生態學實習	1	Practice of Forest Ecology
226137	第二外語(西班牙或法語)	4	Second Foreign Language (Spanish or French)
226138	第二外語(日文二)	2	Second Foreign Language (Japanese)
226139	綜合害蟲管理特論	3	Special Topics on Integrated Pest Management
226140	免疫學概論	3	General Immunology
226141	統計取樣法	2	Sampling Methods
226142	國際漁業合作特論	2	Special Topics on International Fishery Cooperation
226143	植物病害防治特論	2	Special Topics on Plant Diseases Control
226144	植物病害防治特論實驗	1	Lab. of Special Topics on Plant Diseases Control
226145	景觀規劃特論	3	Special Topics on Landscape Planning
226146	畜產污染防治與資源利用	2	Livestock Pollution Control and Resource Utilization
226147	基因調控	2	Gene Regulation
226148	高級英文	0	Advanced English
226149	高級中文	0	Advanced Chinese

226007 Agricultural Research Information 2 S , F

This course is to provide students with the knowledge of agricultural information types and sources, agricultural information management, and applications of these knowledge in experimental designs and research.

226008 試驗設計及數據分析 2 選 謝清祥、上

本課程之目的在於訓練研究生如何利用統計及試驗設計之方法以從事基本之試驗研究，其主要內容包括：各種生物數據之性質及整理，數據均質性分析，迴歸與相關性分析，共變方分析、試驗設計方法及線型分析及上述試驗分析之電腦應用。

226008 Experimental Design and Data Analysis 2 S H. H. Ching F

This course is to train students on how to use statistical and experimental methods on conducting research experiments. Its contents include: characteristics of biological data and its collection, homogeneous tests, regression and correlation analysis, covariance analysis, experimental designs and linear analysis, and computer applications of the above analyses.

226009 熱帶農業生態 2 選 下

本課程深入探討台灣農業發展過程及其展望。本課程內容包括農業於生態及歷史學上之關係，及熱帶水稻、豆類、玉米、甘蔗、蔬菜、花卉及水果之生產及生長環境。此外亦將探討農業生態系之動態及熱帶農業之展望。

226009 Tropical Agriculture Ecology 2 S S

This course is to introduce the fundamental concepts, theories and practices of biological control of pathogens, and insect pest and weeds. Its contents include: biological control's history, ecological bases, foreign exploration for beneficial organisms, methods of colonization, recovery and evaluation, and integration with chemical control and microbial control. In addition, studies of major biological control projects in terms of their success/failure and trend will also be discussed.

226010 農業發展與國際合作 4 選 謝順景郭忠吉
孫明賢、李柏淳
鄒麓生

下

本課程內容在介紹中華民國在臺灣五十年來之農業發展過程，從初期的土地改革政策和以農業為主之經濟發展，進入以工商業為主之現代化社會，同時在配合農業升級及回饋國際社會政策下推展各項國際合作計劃；目的在使同學能鑑往知來，為下一世紀之農業開創新局。

226010 Agricultural Development and International Cooperation 4 S S. C. Hsieh 、C. C. Kuo
M. H. Sun 、P. P. Li
Samson Tsou 、S. C. Tsai
S

This course is to provide an insight of agricultural development of Taiwan for the past 50 years, and also point out its new direction for the next century. Its contents include: land reform programs, agricultural trade and economic development, transformation from an agricultural to industrialized economy, and international cooperation.

226011 系統分析 3 選 、上

本課程將介紹以系統方法來解決農業及環境的問題。主題包括 1.系統模式 2.空間變數 3.遙感探測對農業 4.自然資源系統模式。

226011 System Analysis 3 S , F

This course is to introduce how to use the systematic methods to solve the problems of agricultural and environment. Its contents include: system models; spatial variables; remote sensing; and nature resource system.

226012 技術轉移 3 選 謝順景、高德錚
吳明敏、
下

本課程在教授資訊分析及整合之基本知識與技術，及溝通技巧在轉移技術產品至客戶上之應用，學習重點包括在農業研究結果之轉移及農產品製造與處理設備上之實際經驗。

226012 Technology Transfers 3 S S. C. Hsieh、T. C. Kao
M. M. Wu
S

This course is to provide students with the basic knowledge and skills in the synthesis and analysis of information, and the utilization of communication tools in transferring products. Emphasis will be placed on the actual experience in transferring results of agricultural research and manufacturing or processing facilities for agricultural products.

226013 專題研究 2 選

本課程由教師輔導學生選定其有興趣之研究題目，進行文獻收集、討論及實驗設計，並將研究結果撰寫報告。

226013 Special Research Project 2 S

Each student will select his/her research topic of interest and be requested to search literature, discuss with faculty members, and design experiment. Finally, a report of research results will be required.

226014 高等作物育種學 2 選 、上

本課程以講授及討論不同主題之作物育種理論及育種技術，內容包括以下章節：

1.育種之演變 2.族群與變異 3.變異誘導與處理 4.體細胞雜交 5.基因轉移 6.選拔策略 7.抗生物性及非生物性之遺傳及育種 8.特殊性狀之育種 9.其他

226014 Advanced Crop Breeding 2 S , F

This course is to teach students plant breeding theories and technique. Its contents include: the evolution of plant breeding; population structure and variability; induced variation and its manipulation; somatic hybridization; gene transfer to plants; selection strategies; breeding and genetics on a biotic and biotic stress; and specific trait breeding.

226015 高等植物營養學 2 選 陳光堯、上

本課程介紹營養元素與作物生育的關係。將講述植物營養元素的種類、功能；植物對營養元素的吸收、運轉與再分佈；影響營養元素吸收的因素；各營養素的功能；營養元素與植物病蟲害及產量的關係等。

226015 Advanced Plant Nutrition 2 S Stanley Chen, F

This course is to introduce the relationship between nutrients and plant growth and development. Its contents include: classification and functions of nutrients; the uptake, trans-location and redistribution of different nutrients; the relationships between nutrients and crop yield and pests.

226016 高等植物營養學實習 1 選 陳光堯、上

本課程藉由進行植物營養元素的地下部與地上部吸收試驗、操作不同分析儀器如：氮分解與蒸餾裝置、光電比色計與原子吸收儀等，及熟悉各營養元素的分析方法，讓學生能獨立進行植物營養方面的試驗，並更瞭解植物對營養元素的吸收、運轉與功能。

226016 Advanced Plant Nutrition Lab. 1 S Stanley Chen, F

This lab session is to offer students practices in tissue analysis, uptake and translocation of nutrients as well as functions of different elements. The absorption of nutrients from roots and shoots will be compared. Familiarity in operation of different instruments, such as Kjeldal N2 analyzer, spectro-meter, atomic absorption spectrometer and tissue analysis of major and minor nutrients is expected.

226017 環控植物生理學 3 選 陳光堯、下

本課程在教授生物物理及生物化學在植物生理及生態上之應用，同時強調環境控制在農業研究上之重要性及其相關技術之運用；主要內容包括植物體與環境間各種形式之物質及能量的交換，如水份、二氧化碳之擴散方式、平衡分析與能量運用等。

**226017 Controlled Environment 3 S Stanley Chen, S
Plant Physiology**

This course is to provide students with the basic knowledge of the applications of biophysics and biochemistry on plant physiology and ecology. The importance of a “controlled environment” and the technology of “environmental control” will also be covered. Its contents include: diffusion; chemical and energy potential gradients; solute movement in and out of plant cells; the interconnection of various energy forms; and energy and matter exchange between plant and environment (water vapor and carbon dioxide, energy budget analysis, and water movement from soil to plant to atmosphere).

226018 個體經濟特論 3 選 鍾惠雯、下

本課程之目的在於傳授學生經濟學理論。其主要內容包括：數學背景，生產與成本函數，顧客理論，自由競爭，及單一市場平衡。

**226018 Special Topics on 3 S Rebecca H. Chung, S
Microeconomics**

This course is to teach students microeconomic theory. Its contents include: mathematical background; production and cost functions; consumer theory; the competitive firms; and single market equilibrium.

226019 社會昆蟲學特論 2 選 、上

本課程在介紹群居昆蟲之生物及生態學基本知識，例如蜜蜂、螞蟻、白蟻等，教授之重點在於闡述其演化、食物、覓食行為、階級區分、繁殖、聚落及群體生活等各種學說。

226019 Special Topics on Social Insects 2 S , F

This course is to introduce to students the basic knowledge of the biology and ecology of social insects, including bees, ants, and termites, with emphasis on the theories of evolution, food, foraging behavior, caste differentiation, reproduction, colonies and communities.

226020 社會昆蟲學特論實習 1 選 、上

本實習之目的在使學生熟悉群居昆蟲形成聚落和其群體生活之各別及綜合現象，學生將由實際操作及田野觀察中學習蜜蜂、螞蟻、白蟻聚落之形成及維護。

**226020 Special Topics on Social 1 S , F
Insects Lab.**

This lab session is to familiarize students with the formation of colonies and communities of social insects and their interactions through hands-on experiments and field observations.

Colonies of bees, ants, or termites will be initiated and maintained by students.

226022 高等昆蟲學 2 選 、上

繼基礎昆蟲學後，本課程從昆蟲之發生演化、行態、生理、生態等角度探討昆蟲之適存與多樣性，提供昆蟲於自然與人為環境下之角色與功能的思考空間。

226022 Advanced Entomology 2 S ,F

This course is to introduce fundamental of entomology in insect evolution, morphology, physiology, behavior and ecology, and their adaptation and diversity. Also included in the contents are the roles and functions of insects in the national and agricultural environments.

226023 植物保護與永續農業 2 選 、上

本課程將探討臺灣植物病蟲害之發展史及其防治對策，本課程將著重於現行動植物檢疫法規及制度、農藥及其藥害、農業環境與植物生產之關係。低投入永續農業、替代農業、與永續農業之關係亦將討論。此外本課程亦探討永續農業世界上執行之現況。

226023 Plant Protection in Sustainable Agriculture 2 S ,F

This course is to review the history of the occurrence of plant disease insect pests in Taiwan and their control measures. Its contents include: the current plant quarantine and inspection systems; pesticides and the problems associated with their uses; and agricultural environment and plant production. The linkage of plant protection and sustainable agriculture will also be discussed. In addition, organic agriculture, low-input sustainable agriculture, alternative agriculture and their relationship with sustainable agriculture will be discussed. Finally, a critical review of worldwide projects on sustainable agriculture will be made.

226024 生物防治特論 2 選 、下

本課程介紹植物病蟲害生物防治之基本概念，生態學上之理論及利用。課程內容包括生物防治之發展史、生態基礎、國外天敵之探尋、天敵群落之建立，回收及評估，以及生物防治與化學防治及微生物防治之綜合利用。除此之外，還包括主要生物防治之計畫其成功、失敗及展望。

226024 Special Topics on Biological Control 2 S ,S

The course is to introduce the fundamental concepts, ecological theories and practices of biological control of plants pathogens, insect pests and weeds. Its contents include: biological control's history; ecological bases; foreign exploration for beneficial organisms; methods of colonization, recovery and evaluation; and integration with chemical control and microbial control. In addition, studies of major biological control projects in terms of their success/failure and trend will be introduced.

226025 昆蟲行為學特論 2 選 、上

本課程深入探討動物行為學之理論，昆蟲社會及種間之行為，消息傳遞及演化。本課程著重在於環境因子對昆蟲行為之影響。

226025 Special Topics on Insect Behavior 2 S ,F

This course is to review the theories of ecology, social and inter-specific behavior, communication, and evolution of insects. Emphasis will be placed on the effects of environmental factors on the behavior of insects.

226026 農企業管理特論 3 選 鍾惠雯、上

本課程之目的在於傳授學生基本財務觀念及管理技能。其主要內容包括：財務會計，經理

的角色，瞭解農企業管理，行銷在農企業管理，及農企業的成功。

226026 Special Topics on Agribusiness Management 3 S R. H. Chung, F

This course is to teach students basic financial concepts and management skills. Its contents include: what is agribusiness; the role of a manager; understanding agribusiness management; marketing in agribusiness management; financial accounting, investment analysis; and success of agribusiness.

226027 論文寫作 2 選 、上

本課程旨在訓練研究生對資料蒐集、整理及表達的能力。學生選擇碩士論文有關的主題，蒐集文獻、閱讀、整理成摘要，然後提出報告討論。

226027 Thesis Writing 2 S , F

This course is to train graduate students the ability in searching literature, organizing materials and giving presentations. Students are required to select a topic in the field of those related to their thesis, search and review literature, and draw up an abstract.

226028 行銷管理特論 3 選 鍾惠雯、上

本課程之目的在於傳授學生行銷理念及知識。其主要內容包括：瞭解行銷管理，分析行銷機會，發展行銷策略，策畫行銷節目，及管理行銷人力資源。

226028 Special Topics on Marketing Management 3 S R. H. Chung, F

This course is to teach students the concepts and knowledge of marketing. Its contents include: understanding marketing management; analyzing marketing opportunities; developing marketing strategies; planning marketing programs; and managing the marketing effort.

226030 害蟲化學生態 2 選 、上

本課程主要目的，在於使學生具備下列新知識—包括寄主植物與害蟲互動之植物化學基礎，特別於產卵，害蟲危害寄主植物之生物，植物害蟲與寄生蟲互動之植物化學基礎，植物化學促進費洛蒙之產生，寄主植物之抗性反感染性抵制，反寄主植物與害蟲在蟲害產地上相關性之化學基礎。

226030 Chemical Ecology of Insect Pests 2 S P. Y. Lai, F

This course is to introduce students the knowledge in chemical ecology of insect pests on host plants. Its contents include: insect and host colant interaction; mechanisms and strategies of plant finding especially for oviposition; biochemistry of damage on host plant; role of phytochemicals in insect pest–parasitoid interaction; involvement of phytochemicals in stimulation of pheromone production; host plant susceptibility and resistance; mechanism of host plant resistance in various plant families; and exploitation of chemical basis of host plants–insect pest association in pest management.

226031 植物生態學特論 2 選 、下

本課程旨在教授學生植物生態，包括：植物社會的觀念、生態系的結構與功能、生態系中生物地質化學循環、全球變遷與陸生生態系、生物多樣性觀念，假說，研究、生物多樣性與保育、族群生態學之介紹、競爭與相剋作用、植物群落的形成機制、分子生態學觀念、分子生態學研究法、分子演化生態學和植物，昆蟲及動物間之共同演化。

226031 Special Topics on Plant Ecology 2 S , S

This course is to teach students the knowledge in plant ecology. Its contents include: concepts of plants community; structure and functions of ecosystems; biogeochemical cycle of terrestrial

ecosystems; global change and terrestrial ecosystem; biodiversity; biodiversity and conservation; population ecology; competition and allelopathy; mechanism of formation of plant population; molecular ecology; evolutionary molecular ecology; and coevolution of plant-insect-animal.

226032 植物化學生態學 2 選 下

本課程旨在介紹學生植物化學生態知識，包括：簡介植物化學生態學、酚酸化合物之萃取及鑑定、類黃素之萃取、純化及鑑定、可見光紫外光譜、質譜及核磁共振光譜之解析、酚酸類化合物之生態角色、類黃素之生態角色、松烯類化合物之萃取、純化及鑑定、松烯類化合物之生態角色、植物鹼之萃取、純化及鑑定、植物鹼之生態角色、相生相剋物質之簡介、真菌毒物質及黃麴毒素、費洛蒙及其他化學傳訊素、植物對外來攻擊之防禦物質、共同演化：植物-昆蟲-動物之交互作用。

226032 Phytochemical Ecology 2 S , S

This course is to introduce the knowledge in phytochemical ecology. Its contents include: isolation and identification of phenolics; isolation and identification of flavonoids; UV-visible, MS, NMR spectroscopic interpretation; ecological roles of terpenoids; isolation and identification of alkaloids; ecological roles of alkaloids; allelochemicals in general; mycotoxins and aflatoxins; pheromones, kairomone, and allomones; phytoalexins; and co-evolution of plant-insect-animal interactions.

226033 永續發展(通識課程) 2 選 上

為加強二十一世紀全民對永續發展的正確概念，永續發展通識課程內容涵蓋：永續發展的定義、永續發展的國際趨勢、我國永續發展的原則及策略綱領、永續發展的壓力－現況－影響－反應（Pressure－State－Impact－Response，簡稱 PSIR 模式），其涵蓋生物多樣性、水資源、能源、人口、經濟、環境污染、環境指標、指數、全球變遷、溫室效應等。此亦提供跨校及社會人士之聆聽，目的在提昇我國對永續發展及綠色矽島之發展概念以達國際永續生存與發展。

226033 General course of sustainable development 2 S , F

This course is to strengthen students the concepts of sustainable development in the 21st century. Its contents include: the definition of sustainability; sustainable development; international trend of sustainability; framework and principles of sustainability; pressure-state-impact-response of sustainability; the aspects of biodiversity; water resource, energy, population, economic, and environmental problems; environment indicator; global change; and greenhouse effect. This course is welcome the general public to sit in. The objective of the course is aiming at establishing the concept of sustainable development to all individual citizens in Taiwan.

226034 細胞遺傳學 2 選 下

本課程提供大學部高年級及研究生研習。課程內容包括細胞遺傳史、染色體之細微構造及染色技術、染色體之變異與演化、細胞遺傳與植物育種之關聯性等。

226034 Cytogenetics 2 S , S

This course is to introduce the knowledge in cytogenetics. It contents include: the history of cytogenetics; the fine structure of chromosomes and staining technique; the diversity and evolution of chromosome; and the relationship between plant breeding and cytogenesis on tropical vegetable production.

226035 數量遺傳學 2 選 顏才博、上

本課程之目的，在使學生瞭解數量性狀的特質、遺傳行為、估算方法和育種上之應用

226035 Quantitative Genetics 2 S Tsair B. Yen, F

This course is to introduce the characteristics of quantitative traits, genetic behavior,

measurement methods, and its applications in breeding.

226036 應用微生物學 3 選 王均琍、上
本課程在講授有益作物生長之有益微生物，如固氮菌，菌根菌，溶磷菌及枯草桿菌等，介紹其作用機制及應用方法。

226036 Applied Microbiology 3 S C. L. Wang, F
The course is to introduce the beneficial microorganisms. Its contents include: nitrogen fixation microorganism; arbuscular endomycorrhizal fungi; and phosphate-solubilizing microorganism and Bacillus. Research and application techniques are also introduced.

226037 植物組織構造與功能專論 2 選 王均琍、下
本課程在講授植物之各種組織，如分生、輸導、分泌及保護組織，其生長、發育及分化之過程。闡明各組織所具有之構造及生理功能。

226037 Special Topics on the Structures and Functions of Plant Tissues 2 S C. L. Wang, S

The course is to introduce the knowledge in the structures and functions of meristematic, conductive, secretory and protective tissues. The process of plant growth, development and differentiation are also introduced.

226038 作物學特論 2 選 古明萱、上
本課程旨在介紹永續農業在水稻田及其生態體系壓力下之關係，內容包括永續農業在資源利用、資源管理、資源與生態體系、水稻田生物物理性、營養及水份需求之維持等。

226038 Advanced Crop Science 2 S M. S. Guu, F

This course is to introduce the concepts of sustainable agriculture in relation to rice farming and stressed ecosystems. Its contents included: sustainability and resource utilization, resource management; resource and stressed eco-systems; biophysical basis of sustainability of rice farming; and maintenance of the nutrient requirements and water supplies of rice.

226039 種子生理學 2 選 古明萱、上

本課程包括(一)種子發育與發芽。(二)種子休眠與發芽。(三)種子活力與發芽三部份。內容包括種子發育與貯存期間之種子代謝、植物荷爾蒙調節、季節變動、光敏素、氧化磷酸化作用與種子發芽、休眠及活力關係做敘述。

226039 Seed Physiology 2 S M. S. Guu, F

This course is to introduce the concepts and knowledge of seed physiology. Its contents include: seed development and germination; seed dormancy and germination; and seed vigor and germination. The metabolism of seed, the regulation of plant hormone, seasonal pattern variation, photochrome, and oxidative phosphorylation of seed development and seed storage in relation to the germination, dormancy and vigor of seeds will be introduced.

226040 作物營養管理與診斷技術 2 選 上

本課程主要在闡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。

226040 Crop Nutrition Management and Diagnostic Techniques 2 S F

This course is to introduce the theory and mechanism of nutrients in crop management. It emphasizes the principles and methods of crop nutrition management, symptoms of nutrient disorders, diagnostic techniques and methods of amendment.

226041 作物營養管理與診斷技術實驗 1 選 上

本實習主要在使學生認識作物無機營養失調的症狀,以及熟悉作物無機營養的診斷技術與分析方法。

**226041 Crop Nutrition Management 1 R F
and Diagnostic Techniques Lab.**

This lab session is to offer hands-on practices on identifying symptoms of crop nutrient disorders and other diagnostic techniques, especially on plant and soil analysis.

**226042 熱帶作物生理學 2 選 傅炳山、蔡秀隆
下**

本課程講授目的在提供熱帶作物生理的知識。首先談到熱帶環境不同於溫帶環境，將影響它的生理反應。其次談到個別的熱帶作物(包括農藝與園藝作物)的構造與生態生理的特質。指出遺傳改良與耕作操作的改善，以增進其產量與品質的提昇。

**226042 Tropical Crop Physiology 2 S B. S. Fuh
/S. L. Tsai S**

This course is to introduce crop physiology in the tropics. Its contents include: physiological adaptations of tropical crops to their environments; characteristics of structure and ecological physiology of tropical crops; and genetics and agronomic practice of tropical crops.

**226043 植物逆境生理 2 選 蔡秀隆、傅炳山
下**

本課程在探討植物在逆境下的生理反應。由於人口的增加與人類活動，工商住宅的擴張使得植物的生產被迫遷移到邊際地區，以致乾旱、營養缺乏、重金屬毒害、空氣汙染等逆境經常發生，造成植物生理的改變，不正常的代謝、生長受到抑制、產量減少。進一步的探討逆境的問題，以減少對植物生長及作物產量的影響。

**226043 Stress Physiology of Plants 2 S L. Tsai
/B. S. Fuh, S**

This course is to discuss the full range of environmental stress, including drought, temperature, nutrient, salt, and irradiation; and explores plant responses to each.

226044 植物生物化學 2 選 傅炳山、下

本課程主要探討與農園藝作物生產較有關的內容為主。其中包括脂質、氨基酸、碳水化合物、配糖體及芳香族烴的形成及途徑。另外，植物二次代謝作用、色素轉換機制等，亦列為重點。

226044 Plant Biochemistry 2 S B. S. Fuh, S

This course is to discuss the important aspects of plant biochemistry. Its contents include: the biosynthesis of lipids, amino acids, carbohydrates, glycosides, and aromatic amines; and the metabolism of plants.

226045 果樹生理特論 2 選 傅炳山、上

以光線、溫度、水分等環境因素，與栽培管理措施等對果樹生理、生育、產量與品質之影響。

**226045 Special Topics on Fruit 2 S B. S. Fuh, F
Crop Physiology**

This course is to offer knowledge on effects of environmental factors such as radiation, temperature and water on fruit production, stress physiology, physiology of transport and partitioning, nutrition, and fruit set and its development.

226046 高等果樹學 2 選 顏昌瑞、上
講述果樹學之最新發展及趨勢、包括果樹立體結構與產量及品質之關係、穗砧之交互影響、果樹之環境因素與控制、臺灣果樹之現況等引申說明。

226046 Advanced Pomology 2 S C. R. Yen, F
This course is to offer knowledge on the current development and trends of fruit production. Its contents included: tree architecture and its effects on yield and fruit quality; rootstock-scion relationships; environmental control; orchard system; and current status of fruit production in Taiwan.

226047 高等蔬菜學 2 選 金石文、上
本課程提供大學部高年級及研究生研習。課程內容討論有關蔬菜的栽培生理及遺傳育種特性、過去本省重要蔬菜發展之源由、現今蔬菜生產之特色及展望。

226047 Advanced Olericulture 2 S S. W. Chin F
This course is to provide advanced cultured physiology and genetic breeding of vegetables. Its contents include: the physiology and genetic breeding in vegetable crops, the origin and characteristics of today's vegetable industry in Taiwan; and special features and uniqueness of vegetable crop production in Taiwan.

226048 高等花卉學 2 選 呂廷森 何韻詩、上
本課程之目的乃是深入探討花卉園藝技術，主要課程內容為：1、花卉種源保存與開發 2、花卉種苗生產技術 3、花卉栽培介質與養、水分管理 4、花卉開花生理與調節 5、花卉商品設計與流通 6、花卉栽培技術各論。

226048 Advanced Floriculture 2 S T. S. Lu、Y. S. Ho, F
This course is to provide advanced study on floriculture. Its contents include: flower variety reservation and development; techniques of floral seeds and seedlings propagation; management of substrates, fertilization and water in floriculture; flowering physiology and regulation; and product design and sales; and flower forcing of special crops.

226049 高等園產品處理 2 選 柯立祥、上
本課程是在農園產品處理技術之基本基礎上，進一步從生理、生化上，介紹園產品採收後之變化機制，以及控制產品劣變、老化之方法與最新技術。從理論與實用上，配合國內產業與市場現況，加以討論，期能學理與應用兼顧，引導學生發揮吸收、思考及創新之能力。課程內容涵蓋園產品採收後之生理、生化變化，選別、分級包裝、溫度管理、濕度管理、病害控制、貯運技術、特殊處理...等等。

226049 Advanced Horticultural Product Handling 2 S L. S. Ke, S
This course is to provide a thorough overview of how plants and live plant products respond after harvest. It focuses on the basic principles governing postharvest physiology; cellular and sub-cellular structures of harvested products; and metabolic alterations and changes in biochemical constituents after harvest. In addition, it also discusses the basic environmental factors that cause stresses after harvest. Finally, this course also includes the current postharvest technologies used world wide.

226050 應用分子生物學 3 選 陳福旗、下
本課程旨在教授有關分子生物學基礎及其在農業、醫學等之應用。內容包含核酸構造、DNA複製、轉錄作用、轉譯作用、基因體研究、蛋白質體研究、基因調控、基因之操作與基因工程、農業的應用、醫學的應用、其他應用。

226050 Applied Molecular Biology 3 S F.C. Chen, S

The course is to offer basic molecular biology and its application in agriculture and medicine. The contents include: nucleic acid structure; DNA replication; transcription; translation; genomics; proteomics; gene regulation; gene manipulation and genetic engineering; application in agriculture; and medicine and other areas.

226051 農業生物技術 3 選 陳福旗、下

本課程旨在討論分子生物及生物技術於農學上的展望。

226051 Agricultural Biotechnology 3 S F. C. Chen, S

The course is to discuss the development and perspectives of various aspects of molecular biology and biotechnology in agriculture.

226054 綜合蔬菜生產 4 選 上

本課程在探討熱帶地區蔬菜作物之特性及生產模式，將利用田間資料、互動電腦程式、幻燈片、電視等各種教材及設備，介紹蔬菜作物之基本生物及生態學、系統性之商業生產、以及各種熱帶地區之蔬菜生產模式。

226054 Integrated Vegetable Production 4 S F

This course is to characterize and discuss the major vegetable crops and their production systems in the tropics. Its contents include: biology and ecology of vegetable crops, commercial vegetable production systems, lowland rice-based vegetable production systems, and homestead vegetable production systems in the tropics.

226055 電顯技術 2 選 顏才博、上

本課程主要介紹電子顯微鏡的基本原理與應用 內容包括兩部分:(一)穿透式電子顯微鏡之構造，材料之固定與包埋、超薄切片、負染色與金屬投(二)掃描式電子顯微鏡之構造，樣品製作、臨界點乾燥等。

226055 Electron Microscopy 2 S Tsair B. Yen, F

The course is to offer a complete understanding of the principles and application of electron microscope. Its contents include: construction of transmission electron microscope TEM; chemical fixation and embedding staining and metal shadowing; construction of scanning electron microscope (SEM), and preparation of specimen for SEM.

226056 電顯技術實驗 1 選 顏才博、上

本課程著重電子顯微鏡之實際操作，內容包括(一)金屬、網與支持膜製備、生物樣品之負染色、固定、包埋、超薄切片與染色，以及穿透式電顯觀察照相(二)掃描式電顯樣品之製作，臨界點乾燥及儀器操作。

226056 Electron Microscopy Lab. 1 S Tsair B. Yen, F

This lab session emphasizes on technical training in electron microscopy. Its contents include: preparation of grid and supporting film; fixation and photography for transmission electron microscopy; preparation of biological specimen for SEM; critical point drying; and operation of SEM.

226058 植物病原學特論 2 選 梁文進、上

本課程主要在深入了解植物病原真菌、細菌、病毒和線蟲等之形態、分類、生理、生態及其致病為害之特性。

226058 Special Topics on Plant Pathogen 2 S W. J. Liang, F

This course is to discuss the biotic factors that caused plant diseases and characteristic of morphology, physiology, ecology, classification, and pathogenicity of pathogens.

226059 植物流行病學 2 選 梁文進、下

本課程討論植物流行病學之主因子，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。

226059 Plant Disease Epidemiology 2 S W. J. Liang, S

This course is to discuss the relationship among hosts, pathogens and environment factors. Its contents include: plant disease elements (host, pathogen and environment factors) affecting the 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 which are integrated with expert systems of plant pathology.

226060 土壤傳播病害 2 選 何婉清、下

本課程介紹主要的土壤傳播病害，包括病徵、致病病原、寄主與病原菌及環境因素與病勢發展之相互關係；同時討論本類病害之綜合防措施。

226060 Soil-borne Disease 2 S Wang-Ching Ho, S

This course is to introduce important soil-borne diseases. Its contents include: disease symptoms; pathogens which caused soil-borne diseases; host-pathogen interaction; environmental factors vs. diseases development; and integrated management of soil-born diseases.

226061 種子傳播病害 2 選 何婉清、下

本課程講授引起植物種子病害的各種因子、病徵；環境因子與植物病害發生的關係；種子病害感病方式、罹病種子對幼苗以及田間作物生長的影響。本課程亦探討種媒病害的管理對策；種子、穀物儲藏期間所可能發生的倉儲病害，以及病變穀物可能對人畜所造成的影響。

226061 Seed-borne Disease 2 S Wang-Ching Ho, S

This course is to introduce the factors of seed-borne diseases; symptoms; interaction between environmental factors and disease development; transmission pattern of seed-borne diseases from seeds to seeding as well as their effects on economics. Also introduced are the storage diseases of seeds and cereals and how they affect human health and the integrated management for seed-borne and storage diseases.

226062 高等植物病理學 2 選 下

高等植物病理學是由分子、細胞、組織及器官不同層次探討植物病變過程之形態與生理變化及病原與寄主之間相互作用，進而討論植物抗病機制及病害管理之策略，尤其注重分子生物技術應用於植物病理之發展。

226062 Advanced Plant Pathology 2 S S

This course is to review and discuss the morphological and physiological changes of diseased plants from molecular, cellular, and histological to organ levels. The pathogenesis of the host disease resistance, and the interaction between host and pathogen related biotechnology applied in disease diagnosis and control are also discussed.

226063 熱帶植物病害特論 2 選 陳滄海、下

本課程首先介紹熱帶農業體系之特性，進而論及熱帶植物田間與採收儲運期之害種類，發生生態，最後再探討經濟有效之防治方法。範圍涵蓋穀類作物、豆科作物、根莖作物、蔬菜、花卉、飼料作物、藥草及棉、麻、油脂類特作物等。

226063 Special Topics on Tropical Plant Diseases 2 S T. H. Chen, S

This course is to offer a complete understanding of the characteristics of tropical plant diseases

and how to manage the diseases. The diseases of the tropical crops, e.g., cereals, food legumes, root and tuber crops, spices, vegetables, flowers, forages, drug crops, fiber crops, and oil crops will be discussed.

- 226064 熱帶植物蟲害特論** 2 選 , 下
 本課程以重要熱帶作物為主軸，講述其上主要昆蟲之為害、發生、生活史、經濟影響與防治現況，提供足夠之生物學資訊，作為學生規劃熱帶害蟲管理系統的思考與設計。
- 226064 Special Topics on Tropical Insect Pests** 2 S , S
 This course is to discuss the key insect pests of the major crops in tropics. Their damage, economic importance, occurrence, life history and state of control for these pests are emphasized.
- 226065 血清學技術** 2 選 陳滄海、下
 本課程主要介紹免疫學原理、抗原、抗體之特性與製備，以及各種血清學反應與應用。
- 226065 Serology** 2 S T. H. Chen, S
 This course is to offer a comprehensive introduction to the principle of immunology. Its contents include: the preparation of immunology production of antibody; serological techniques; and application in plant protection.
- 226066 血清學技術實驗** 1 選 陳滄海、下
 本課程主要內容包括抗原之純化製備、抗體之製備與純化，常用血清學技術。
- 226066 Serology Lab.** 1 S T. H. Chen, S
 The contents of this lab session include: preparation of immunology; production, purification and characterization of antibody; and serological techniques applied in plant protection.
- 226067 昆蟲生態特論** 2 選 張念台、下
 本課程介紹生態系之概念及著重在昆蟲之於生物及生態學上與植物、動物及其他環境因子之關係。
- 226067 Special Topics on Insect Ecology** 2 S N. T. Chang, S
 This course is to introduce the concept on ecosystems, and the biology and ecology of insects with emphasis on the relations of insects to plants, animals, and other environmental factors.
- 226068 分子生物學在植保上之應用** 2 選 鄭秋雄、上
 本課程主要介紹分子生物學應用於植物病害診斷、害蟲鑑定、植物病蟲害防治、植物抗病、抗蟲、抗藥及抗逆境育種等技術。
- 226068 Application of Molecular Biology in Plant Protection** 2 S C. C. Cheng, F
 This course is to introduce the application of molecular biology. Its contents include: the diagnosis of plant diseases; identification of insect pests; integrated management systems on plant diseases and insect pests; and plant breeding for disease-resistance, insect-resistance, pesticide resistance, and environmental stress-resistance.
- 226069 農藥學特論** 2 選 辛竹英、下
 介紹農藥的發展及分類，劑藥配製的物化原理，農藥在生物體內的生化反應、對環境的衝擊及生物技術在植物保護的應用。
- 226069 Special Topics on Pesticides** 2 S C. Y. Hsin, S
 This course is to provide the development and classification of pesticides. Its contents include: the physiochemical factors in pesticide formulation; the biochemical reactions of pesticides in

living organisms; the environmental impact of pesticides; and the use of biotechnology on plant protection.

226070 植物害蟲鑑定與檢疫技術 2 選 上
本實習課程內容包括各種害蟲診斷及檢疫技術之訓練，害蟲防治方法之介紹以及綜合管理技術。

226070 Identification and Quarantine of Insect Pests 2 S F

This course is to introduce various technologies of diagnosis and quarantine of pest diseases. Its contents include: the practical training of diagnosis; quarantine of insect pests, and their methods of integrated management.

226071 植物病害診斷與檢疫技術 2 選 鄭秋雄、上

本課程主要介紹植物病害之各種診斷技術與檢疫技術。課程內容包括病徵學、病原形態學、血清學、生物檢定及分子生物學等病害診斷技術與植物檢疫技術之介紹。

226071 Diagnosis and Quarantine of Plant Diseases 2 S C. C. Cheng, F

This course is to introduce various technologies of diagnosis and quarantine of plant diseases. Its contents include: pathogenic morphology; serology; and bioassay and molecular biological diagnosis of plant diseases and plant quarantine.

226072 生物技術特論 2 選 鄭秋雄、上

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。

226072 Special Topics on Biotechnology 2 S C. C. Cheng, F

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

226073 植物病毒學特論 2 選 陳滄海、上

本課程主要強調由分子層次討論植物病毒的蛋白質構造與核酸組成，病毒在植物體內之增殖與移行、媒介傳播之機制，遺傳與變異，以及病毒之分子鑑定與檢測新技術之進展。

226073 Special Topics on Plant Virology 2 S T. H. Chen, F

This course is to give a comprehensive understanding of molecular biology of plant viruses to help students obtain theoretical and practical knowledge of plant virology. Its contents include: molecular structure of virion and genome; mechanisms of virus replication; movement and transmission; variation; and advances on technology of virus identification and detection.

226074 植物病態生理學 2 選 梁文進、上

植物病態生理學課程乃在教導學生了解植物病原體在疾病發展過程中，其引發疾病之武器及機制，植物對病原體抗拒之防禦系統，植物病原體之交互作用所引起植物生理生化之變化，及病原體致病力與植物抗病力之遺傳學。

226074 Physiological Plant Pathology 2 S W. J. Liang, F

This course is to introduce the mechanisms of pathogen infection in the disease cycle. Its contents include: the defensive systems of host plants against the pathogens; the effects of

pathogens on plant physiological functions; and the genetics of virulence in pathogens and resistance in host plants.

226075 景觀植栽 2 選 蔡龍銘、上

本課程介紹景觀植栽包括下列項目：

(一)植物特性概說。(二)景觀植物之類別：樹木、竹、草花、地被植物等。(三)植物在環境上之功能：空間效果、工程機能、氣候調節、美學機能等。(四)植栽樹種之選擇與配置：樹種選擇之原則，植栽配置之原則及方法。(五)植栽之施工：樹木移植、斷根處理、立支柱、灌溉等。(六)植栽之維護與管理：維護管理之器具與設備、澆水、施肥、病蟲害防除、防風支柱、修剪、誘引、中耕、補植等。

226075 Landscape Plantation 2 S Tsai Lung – Ming, F

This course is to offer students the concept and knowledge in landscape plantation. Its contents include: introduction of plant characteristics; the categories of landscape plants; the environmental functions of plants; selection and location of plants; planting engineering; and maintenance and management of plants.

226076 土地開發與管制 3 選 毛冠貴、上

本課程旨在從土地法、平均地權條例、區域計畫法、都市計畫法、農業發展條例及農地重畫條例等法令，介紹台灣的土地開發與管制方式。台灣目前土地的主要開發方式為區段徵收及土地重畫，未來將兼採用開發許可制區段徵收，及土地重畫等方式辦理

226076 Land Development and Control 3 S G. G. Mao, F

This course is to introduce the principles of soil erosion and the procedures to prevent soil and water loss. The leveling, grading and drainage system designs are also covered.

226077 休閒農業 3 選 盧惠敏、上

1.休閒農業之成立 2.休閒農業種類及特徵 3.休閒農業選擇及決定方法 4.休閒農業內設施及配置 5.開業準備 6.休閒農業營運 7.圃場及生產管理注意事項

226077 Leisure Farm Management 3 S H. M.Lu, F

This course is to offer students the knowledge on leisure farm management. Its contents include: establishment of the leisure farm management; types and characteristics of the leisure farm management; methods of selection and decision on leisure farm management; facilities and equipment for the leisure farm management; preparation for operating leisure farm; operation on leisure farm management; and major issues on farm and production administration.

226078 農產利用 2 選 蔡龍銘、下

農產利用主要是農、漁、牧產品之貯藏、運輸、加工等技術，內容包括：

(一)農產品之原料特性(二)貯藏保鮮之原理(三)農產品之冷藏、冷凍(四)食品加工及保存之原理(五)蔬果之乾製、醃漬、罐製、果汁加工等(六)肉品之加工、乳品之加工(七)微生物與食品加工(八)水產類加工(九)食品之包裝與包裝容器(十)商品化與販售技巧。

226078 Agricultural Product Utilization 2 S Tsai Lung-Ming, S

This course is to provide students with the knowledge of the techniques of food storage, transportation and processing. Its contents include: the characteristics of raw materials; the principles for keeping freshness of food, the refrigeration and freezing of foods; drying, pickling, canning, juicing of fruits and vegetables; the processing and preservation principles of food; meat processing and milk processing; fishery products processing; fermentation and food processing; the packaging and packaging materials; and commercialization and marketing of food products.

226079 農園水土與保持 2 選 簡勇成、下

本課程介紹熱帶地區常見的土壤流失原因及發生的過程，並針對土壤流失的原因介紹相應對策；包括工程方法如山邊溝、平台及與農業方法如覆蓋、敷蓋等實用策略以控制農地土壤、水份超量流失，進而達到農地永續使用的目的。

**226079 Water and Soil Conservation 2 S Y. C. Jian, S
on Farm**

This course is to provide students with the knowledge of why and how the soil and water loss in the tropics. To minimize the loss of soil and water is the key of success in farming. The leveling, grading and drainage designs of farm land are also introduced.

226080 生態環境規劃 3 選 盧惠敏、下

生態環境規劃是從靜態的視覺景觀形式的實質規劃，擴展到生態保護、社會參與、歷史文化及動態規劃方法討論的課題。

以生態的觀點出發，討論環境規劃的內容理論與方法，首先討論影響環境規劃的生態元素(土地、空氣、水)進而探討環境規劃內容，包括景觀、運輸通道、社區、城市、區域規劃、動態保護等，規劃設計理論與實例探討。

**226080 Ecology Environment Planning 3 S H. M. Lu, S
on Farm**

This course is to introduce the knowledge and concepts of planning to sustain ecology environment. Its contents include: ecology conservation; society participation; historical culture; and dynamic site planning. Emphases will be on opportunities and constraints for development.

226081 造園設計特論 3 選 羅清吉、上

本課程主要教學目的,在使學生習得造園設計的相關理論與程序，了解各項設計分析技巧，並熟練景觀設計繪圖運用景觀設計之電腦軟體。

**226081 Special Topic on landscape 3 S C. C. Lo, F
Design**

This course is to provide landscape design principles and procedures so that students will be able to understand and familiar with various design analysis techniques and design drawing softwares.

226082 飼料生物培養技術特論 2 選 上

本課程係專門討論近年新研發之載體餌料生物之培養技術，其中選擇特別之專題，如矽藻眼虫，輪虫，豐年蝦，水蚤及蛆為主要的討論對象。

**226082 Special Topics on Live 2 S F
Food Cultivation**

This course is to introduce the recently developed techniques on culturing live foods, with specific live food being chosen for discussion such as diatoms, Eugenia, rotifer, brine shrimp, copepod, and fly larva.

226083 軟體動物養殖特論 2 選 、上

本課程內容分為兩部分：軟體動物養殖的複習及閱讀已發表在國內外著名期刊和軟體動物養殖相關的論文為主。

**226083 Special Topics on 2 S , F
Mollusk Culture**

This course is to introduce technique on culturing mollusk with emphases on reviewing mollusk culture and literature reviewing of recently published related papers.

226084 魚類學特論 2 選 、上

本課程內容分為兩部分：魚類學的複習介紹及閱讀已發表在國內外著名期刊的和魚類學相關之論文為主。

226084 Special Topics on Ichthyology 2 S , F

This course is to provide students with the updated knowledge in Ichthyology with emphases on reviewing culture practices and literature reviewing of recently published related papers.

226085 新魚種養殖特論 2 選 、上

本課程針對現金尚未養殖，不久將來有可能成為養殖的魚種，討論其分布形態，生態，習性，生活使等。

226085 Special Topics on New Fish Species Culture 2 S , F

This course is to provide students with the knowledge and technique new fish species. Its contents include: the distribution; ecology; and habitats and the life history of fish species that will be cultured in the near future.

226086 分子生物學特論 2 選 葉文吉、上

本課程將以基本分子生物學為基礎，針對學生研究之主體，選擇適合之專題研究報告探討其在分子生物學上之意義，以加深學生在分子生物學上的知識。課程主要著重在：1)基因的基本理論結構 2)基因的表現及其控制理論 3)基因轉殖的分子生物學 4)細胞結構的分子生物學。

226086 Special Topics on Molecular Biology 2 S Wen-Chi Yeh, F

This course is to offer knowledge and application of molecular biology. Its contents include: gene structures; gene expression and control theory; gene transfer in molecular biology; and cell structures in molecular biology.

226087 魚池構築技術特論 2 選 陳鈞華、上

本課程由養殖測量、規劃、設計設施構造（測量、工程圖、水文、渠力、水源工程）、造池工程（施工及估價、工程材料、施工管理）水處理工程（水質自動監測系統、滴濾處理）機電工程（自動投餌機、生餌處理機、空氣壓縮機）水井工程、曝氣工程，期使理論與實務配合。

226087 Special Topics on Fish Pond Construction 2 S J. H. Chen, F

This course is to introduce civil engineering in fishery production, especially in aquacultural engineering. Its contents include: introduction; planning and designing; pond fish farm; costal fish farm; cage fish farm; environment improvement; material and construction; and escalation.

226088 甲殼類生理學特論 3 選 鄭文騰、上

本課程之目的是教導學生了解甲殼類生理及內外環境因子對甲殼類生理的影響。其內容包括：甲殼類內部結構、滲透壓及離子的調節、消化吸收與代謝、氧氣的吸收與運送、酸鹼的平衡調節。

226088 Special Topics on Crustacean Physiology 3 S Cheng Winton, F

This course is to teach students physiological regulation of crustacean, and effects of intrinsic and extrinsic environmental factors in crustacean's physiology. Its contents include: internal anatomy; osmotic and ionic regulation; digestion and metabolism; oxygen uptake and transportation; and regulation of acid-base balance of crustacean.

- 226089 海洋生態特論** 3 選 翁韶蓮、上
介紹海洋生態系中，海洋環境中海流（表層流、風海流、底層流等）潮汐、波浪等物理因子之變化及生物組成之變動。繼而探討並比較沿岸生態系、河口區生態系、大洋生態系之生態特性及生物組成食物鏈等之差異。
- 226089 Special Topics on Marine Ecology** 3 S Chen、S. L. Weng, F
This course is to introduce physical factors in marine environment i.e., surface current, wind ride current, bottom current, tide and wave, etc. Comparison of different ecosystems (e.g. coastal ecosystems, open ocean system, coral reef system, lagoon, and etc.) will be made and discussed.
- 226090 無脊椎動物免疫學** 3 選 鄭文騰、上
本課程之目的是教導學生了解甲殼類及貝類免疫機制及內外環境因子對甲殼類免疫機制的影響。其內容包括：甲殼類免疫系統、貝類免疫系統、無脊椎動物免疫調節。
- 226090 Invertebrate Immunology** 3 S Cheng Winton, F
This course is to teach students immune mechanism of crustacean and molluscs, and the effects of intrinsic and extrinsic environmental factors to immune mechanism in crustacean. Its contents include: immune system of crustacean; immune system of molluscs; and modulation of immunity in invertebrate.
- 226091 酵素利用技術特論** 2 選 、下
本課程係專門討論酵素之純化技術及固定化酵素技術，並將固定化酵素在醫學、化學、飼料及速食品上之利用均詳加討論，提供學生嶄新的生化科技。
- 226091 Special Topics on Enzyme Utilization** 2 S , S
This course is to introduce the techniques on the purification and immobilization of enzymes. Its contents induce: the application of enzymes to the fields of medicine, chemistry, animal feeds and human instant food.
- 226092 自動化養殖特論** 2 選 葉信平、下
本課程內容包括餌料生物生產、繁養殖場生產、超集約循環水養殖系統、外海箱網等之自動化。
- 226092 Special Topics on Aquaculture Automation** 2 S Shinn-Pyng Yeh, S
This course is to introduce the technique on the automation of live food production, fish propagation and aquaculture farm production, intensive re-circulating aquaculture system, and offshore cage culture.
- 226093 海洋生物技術特論** 2 選 葉文吉、下
本課程主要內容包括：1)海洋巨型生物系統的應用 2)海洋生物在水產養殖上的應用 3)海洋污染物的生物分解 4)海洋生物能源的開發
- 226093 Special Topics on Marine Biotechnology** 2 S Wen-Chi Yeh, S
This course is to arouse students' interest in marine biotechnology. Its contents include: marine macrobiotechnology systems; application of biotechnology in aquaculture; biodegradation of marine pollutants; and development of marine bioenergy.
- 226094 循環水養殖技術特論** 2 選 孫寧、下

本課程乃針對目前世界淡水資源日缺及環保意識高漲下，養殖發展之新趨勢—養殖循環水技術之研發—而作有系統之介紹，以提供學生新之觀念及知識。課程內容以室外魚池循環過濾系統及室內超集約養殖循環過濾系統為討論之二個主要單元，另外，室外封閉式循環過濾養殖系統亦為討論之項目。本課程將對以上系統之理論與實際討論。同時亦將討論國內、外為防止超抽地下水而做之有關環境保護之立法，同時，為配合實際教學效果，將做媒體教學及現場參觀，以達學生具體吸收之目的。

226094 Special Topics on Aquaculture 2 S Lin Sun, S
with Recirculatory System

This course is to introduce the newly developed technology and theory in re-circulatory aquaculture system. The open pond system and the high density indoor re-circulatory culture system will be the main topics to be introduced, and the outdoor high density closed re-circulatory system for fish culture will also be introduced. In addition, this course will discuss the environmental protection laws in the world, which were enacted to prevent the over pumping of ground water.

226095 水產經營與管理特論 2 選 孫寧、下

養殖經營與管理與其生產技術同等重要。本課程乃針對養殖經營與管理之理論並配合一些實例及本人之國內、外經驗，來充實學生此方面之知識。由於碩士班之學生將來很有機會負責養殖企業，因此其經營管理之背景十分重要。本課程之主要討論單元為(1)養殖企業與養殖產品之特性。(2)養殖場地點之選擇與養殖場之規劃。(3)養殖投資成本之估算方法及年度生產計畫之擬訂。(4)投資國內、外養殖企業之投資計劃之擬訂。(5)養殖場及養殖企業之管理重點。將以上各單元作有系統之介紹給學生。

226095 Special Topics on Aquaculture 2 S Lin Sun, S
Management

This course is to provide students with the knowledge of aquaculture management. Its contents include: the characteristics of aquaculture business and aquaculture products; how to locate and plan a fish farm; how to estimate the capital for aquaculture investment, and how to plan the annual production; how to set up aquaculture business investment plan in Taiwan and overseas; and principles for fish farming management.

226096 池塘管理技術特論 2 選 、下

本課程係專門集中於池底管理，水質管理，水色管理以及池中污染生物管理等之實務工作之討論，其中討論之對象包括池塘淨化菌之應用，中國五行五色之觀水法及池塘生物制衡技術，提供學生池塘管理新技術。

226096 Special Topics on Fish 2 S ,S
Pond Management

This course is to introduce newly developed techniques on pond bottom management, pond water colors management, and pond polluted organism management. Its contents included: the application of pond cleaning microbe the application of Chinese natural rule "fire pathways" and "five colors"; and the application of the predators.

226097 家畜營養生理 2 選 謝豪晃、上

本課程主要探討家畜營養與生理之關係，瞭解如何從營養觀點在維持正常健康之動物，以及不適當的營養對動物所造成之影響。

課程內容包括：(1)各種營養素之營養生理功能。(2)討論各種動物之消化系及其營養生理。(3)進一步探討不同生理功能及生理階段之特殊營養需。

226097 Animal Nutritional Physiology 2 S H. H. Hsieh, F

This course is to discuss the relationship between nutrition and physiology in animals. Its contents include: the physiological functions of all nutrients, including carbohydrate, lipid, protein, vitamins, and minerals; the digestive physiology in different animals; and the special nutritional needs in various physiological functions and phases.

226098 動物行為和福利 2 選 夏良宙、上

本課程之目的在使學生能瞭解動物行為和福利，以為將來從事畜牧生產之基本資料。課程內容包括：一、動物行為學，二、行為生理，三、意願，四、衝突行為，五、學習，六、社會行為(1)社會基本結構，七、社會行為(2)影響社會行為因素，八、社會行為(3)溝通，九、異常行為，十、生態行為，十一、牛之行為，十二、羊之行為，十三、豬之行為，十四、雞之行為，十五、動物福利，十六、動物福利與動物行為之關係。

226098 Animal behavior and welfare 2 S Liang Chou Hsia, F

This course is to provide the knowledge about animal behavior and welfare. Its contents include: animal behavior; behavior physiology; motivation; conflict behavior; learning; social behavior: organization of society; social behavior: factors which influence on social behavior; social behavior: communication; abnormal behavior; ecological behavior; cattle behavior sheep behavior; pig behavior; poultry behavior; animal welfare; and animal welfare and animal behavior.

226099 熱帶畜牧特論 2 選 ，上

本課程介紹熱帶區畜牧之生產，其內容包括土地資源之利用與環境生態維護，水資源之利用，熱帶作物與牧草生產及農作副產物之利用，熱帶地區高溫高濕環境對家畜生產之影響，從禽畜營養、生理、遺傳育種與畜舍等方面探討改進熱帶地區畜牧生產效率與生態環境之維護。

226099 Special Topics on Tropical Livestock Production 2 S , F

This course is to introduce the livestock production in tropics. Its contents include: the utilization of land resource; environmental and ecological control; tropical crops and grass production; utilization of agricultural by-products; and the effects of high temperature and high moisture. Emphasizes will be made on the improvement on the livestock production.

226100 草食動物營養特論 2 選 夏良宙、上

本課程之目的在於介紹反芻動物生態系統之生物學，並探討此系統之問題與無法解決之困擾，並引導研究生未來研究之方向，課程內容包括(1)闡述反芻動物生態系統，植物—微生物—動物交互作用與飼養策略，(2)飼料作物化學(3)瘤胃功能與微生物學(4)後瘤胃之吸收與代謝(5)後腸發酵。

226100 Special Topics on Nutrition for Herbivores 2 S L. C. Hsia, F

This course is to introduce the biology and problems of the ruminant ecosystem.

Its contents include: description of ruminant ecosystem; forage chemistry; rumen function and microbiology; post-ruminal absorption and metabolism of host animals; and hindgut fermentation.

226101 高環境溫度與禽畜生產 2 選 夏良宙、上

本課程之目的在探討高環境溫度下，家畜禽生產所遇到的問題及解決之方法。課程內容包括：一、熱帶畜牧對動物生產之影響，二、環境之定義，三、溫度相關知識，四、溫度對生理之影響，五、溫度和營養之關係，六、高溫對豬之影響，七、高溫對牛之影響，八、高溫對羊之影響，九、高溫對種雞之影響，十、高溫對肉雞之影響，十一、高溫對蛋雞之

影響，十二、高溫對其他動物之影響，十三、高溫對牧草生產之影響，十四、結論。

226101 High temperature and Animal Production 2 S Liang Chou Hsia, F

This course is to study the effect of high temperature on animal production, and how to solve the problems. Its contents included: animal production problems in tropics; definition of environment; definition of temperature; the effect of temperature on physiology; the effect of temperature on nutrient metabolism; the effect of high temperature on pigs; the effect of high temperature on cattle; the effect of high temperature on sheep and goat; the effect of high temperature on breed chicken; the effect of high temperature on broiler; the effect of high temperature on layer; the effect of high temperature on other animal; the effect of high temperature on forage grass; and conclusion.

226102 實用畜產自動化特論 2 選 夏良宙、上

本課程之目的在探討畜牧生產自動化之一些方法，並檢討其優劣點。課程內容包括：一、養豬自動化：(1)餵飼，(2)檢定，(3)環控，(4)清糞，(5)廢水管理。二、養雞自動化：(1)餵飼，(2)環控，(3)清糞，(4)廢水管理，(5)集蛋。三、養牛自動化：(一)餵飼，(二)環控，(三)清糞，(四)廢水管理，(五)集乳，(六)芻料收穫。

226102 Special Topics on Application of Automation on Animal Production 2 S Liang Chou Hsia, F

This course is to provide students with the understanding on automation of animal production. Its contents include: automation on pig production; automation on poultry production; and automation on dairy cattle production.

226103 生殖技術特論 2 選 、下

由於動物生殖現象存有相當程度之變化，本課程將試著引導學生充分了解一般共同生殖要點及各動物生殖細節之不同，並著重生殖技術方法之介紹，使學生對哺乳動物生殖有全面認識。

課程內容著重(1)性別、性腺功能、懷孕分娩(2)一般生殖技術(3)生物技術應用於生殖。

226103 Special Topics on Reproductive Technology 2 S , S

This course is to discuss the general fundamental facts and difference on reproduction of mammals. Its contents include: gonad function, pregnancy and parturition; basic reproductive technique; and modern biological technique on reproduction.

226104 應用動物育種技術 2 選 、下

本課程目的在讓學生了解家畜育種技術之應用，課程內容包括傳統遺傳與族群遺傳及統計在家畜育種之應用，遺傳率與重複勢之評估，育種價之計算，近親係數與親屬關係之求證，雜交系統與雜交優勢之利用，多性狀之選拔，DNA 輔助標記之利用及家畜改良等。

226104 Applied Animal Breeding Technology 2 S , S

This course is to introduce students the practical applications of animal breeding. Its contents include: classical and population genetics; statistical tools; estimates of heritability and repeatability; estimates of breeding values; verification of inbreeding relationships; crossbreeding system and expected heterosis; selection for multiple traits; and the use of DNA marker and livestock improvement.

226105 家禽學特論 2 選 夏良宙、下

226111 區域經濟與政策分析 2 選 , 上

本課程旨在使學生具有分析區域經濟問題所需具備的觀念與方法，以及訓練學生面對區域經濟發展問題，能提出有效的解決方案。其課程大綱如下：

- (1) 區域經濟基本概念
- (2) 區域經濟模型
- (3) 區域理論與經濟成長
- (4) 區域產業結構
- (5) 區域間的貿易
- (6) 區域間的勞動力移動
- (7) 區域的就業成長
- (8) 區域政策的緣起及目標
- (9) 區域政策的工具
- (10) 區域政策的新方向
- (11) 區域政策效果的測度
- (12) 區域政策的成本及效益

226111 Regional Economics and Policy Analysis 2 S , F

This course is to provide students with a better understanding of why regional economics behave as they do. Its contents include: the fundamental concepts of regional economy; the regional economic models; regional theory and economic growth; regional industrial structure; interregional trade; interregional labor migration; regional employment growth; the origins and objectives of regional policy; regional policy instruments; new direction in regional policy; measuring the effects of regional policy; and the costs and benefits of regional policy.

226112 農企業財務管理 3 選 下

本課程之目的在於探討農企業財務管理之程序、實務及政策。課程內容包含公司財務領域中幾個重要部分，包括進行財務決策時面臨之環境、財務計畫與資本預算、如何在不確定下作決策、風波與報酬、營運資金管理策略及長期資金管理策略等。課程中亦將輔以個案研討以協助學生更進一步了解農企業之財務決策。

226112 Financial Management of Agribusiness 3 S S

This course is to provide students with the procedures, practices, and policies of financial management for the better performance of agribusinesses. Its contents include: the environment of financial decisions; the basic financial planning and investment; decision making under uncertainty; and risk and return. Several case studies will be given and discussed to facilitate the learning by students.

226113 農企業人力資源管理 3 選 , 下

本課程旨在探討農企業經理人及人力資源部門如何管理人力資源，並瞭解農企業經營和人力資源的管理活動必須創造出吸引工作應徵者、留住優秀員工、激勵員工與員工再訓練之功能，以提昇組織整體的生產力，獲取競爭優勢，進而達成企業生存、發展與獲利的目標。

226114 Human Resources Management of Agribusiness 3 S , S

This course is to discuss how manager and human resource department of agribusinesses can

manage personnel/human resources to achieve their goals. Its contents include: understanding yourself; understanding human resource management; and understanding customers.

226114 園藝產品經營 3 選 下

本課程之重點在探討於國際貿易自由化之趨勢下：1.園藝產品業應如何因應市場需求、穩定產銷，以促進產業永續發展。2.探討運用企業經營理念於園藝產品業之研究：(1)相關政策法規，(2)規劃與決策，(3)成本收益與獲益力分析，(4)行銷規劃與管理，(5)組織與領導，(6)管制與評估。

226114 Seminar on Managing Agribusiness of Horticultural Products 3 S ,S

This course is to discuss how to manage agribusiness of horticultural products efficiently under trade liberalization. Its contents include: stabilization of the production and marketing of horticultural products: market-oriented; the related agricultural policy and regulations; planning and decision; cost, benefit, and profitability analysis; capital and finance; marketing planning and management; organization and leadership; and control and evaluation.

226115 溝通技巧 3 選 下

本課程的教學目標為：藉由先哲的語言智慧，西方伯恩、凱茲、洛克、湯麥士、丹諾、劍橋與哈佛的經驗學說，提供學生謹言、慎言、能言、善言、言仁、言義的溝通技巧、並撰寫專題研究報告。本課程的主要內容如下：一、易經的言辭智慧 二、孔子的言語智慧 三、老子的言語智慧 四、孟子的仁民論證 五、荀子的言語智慧 六、墨子的說話藝術 七、非子談說之術 八、鬼谷的言辭韜略 九、戰國策儒士言範 十、伯恩的交流分析 十一、凱茲的衝突管理 十二、洛克的的互動雙贏 十三、湯麥士效能訓練 十四、丹諾的舌戰辯辭 十五、劍橋的溝通協商 十六、哈佛的雙贏協商。

226115 Communication Skills 3 S ,S

This course is to provide students with communication skills and wisdom of speech. Its contents include: the speech wisdom of Confucius; the speech wisdom of Lao Zi; Mencius's police of argument benevolence; the speech wisdom of Xun Zi; the speech wisdom of Mo Zi; communication skills of Han Fei Zi; the strategic-diplomatic speech of Guigu Zi; a model of speech of Confucian school in Chan-Kuo Tse; the Chew Tsew's speech of benevolence and character; transactional analysis of Eric Beme; conflict management of Katz, H. H; Rock's PRAM model of win-win; Dr.Thomas Gordon's efficiency training; Clarence Darrow's defense scheme; communication and negotiation of Bridge University; and the win-win negotiation of Harvard University.

226116 農企業投資分析 3 選 洪仁杰、下

本課程之目的，在使學生瞭解農企業投資的重要概念與投資分析方法，主要內容包括現值模型之性質、現值模型之建構、現值模型之經濟分析、貸款分析、財務投資、交易成本與土地買賣決策、重置原則與租賃決策、計畫分析、以及研究發展與技術移轉之評價。

226116 Agribusiness Investment Analysis 3 S R. J. Hung, S

This course is to provide students with the knowledge and skills for the current models and investment analyses in agribusiness. Its contents include: introduction to present value models; constructing present value models; economic analysis using present models; loan analysis; financial investments; transaction costs and land purchase/sale decisions; replacement principles and leasing decisions; project analysis; and valuation of research, development, and technology transfer.

226117 高等食品加工 2 選 黃卓治、上

本課程主要以膜處理技術、冷凍利用技術、無菌包裝技術、真空加工技術、高壓蒸汽及過熱蒸汽利用技術、高壓利用技術、電磁波利用技術、超臨界氣體萃取技術、氧去除技術、水溫利用技術、生化反應器利用技術、工廠生產技術為單元，介紹其加工利用技術。

226117 Advanced Food Processing 2 S T. C. Huang, F

This course is to offer the technologies and applications of food processing. Its contents include: membrane processing; freezing; aseptic packaging; vacuuming, high pressure and over heat steam treatment; high pressure; micro wave; supercritical extraction; oxygen scavenger; biochemical reactor; and plant production.

226118 高等食品化學 3 選 廖遠東、下

藉由對食品化學基本原理之了解，進而應用到食品工業以克服在製造上或貯藏期間所造成的技術問題。課程內容將包括可食性植物組織、動物組織、修飾澱粉、食用纖維之功能特性及綜合性化學反應及其機制之探討。特別的專討如水膠體、 ω -3 脂肪酸及機能性食品，亦在討論範圍之內。

226118 Advanced Food Chemistry 3 S E. L. Liaw, S

This course is to provide the basic principles and applications of food chemistry. Its contents include: the chemical reaction mechanisms and functional properties of edible plant tissue; muscle tissue; modified starch; dietary fiber; and hydrocolloids. In addition, emphases will also be made on ω -3 fatty acids and functional foods.

**226119 食品科技研究法 3 選 廖遠東、黃卓治
林頌生、上**

探討和食品研究相關之方法與技術、包含實驗的設計、結果的闡釋及論文寫作技巧等一系列的課程。其主要目的在於使學習者在食品領域中熟悉一般的研究方法與技術，並學得基本實驗設計原理應用到實際的食品問題。同時也可深入了解目前食品研究領域中的最新動向。

從適當的實驗設計到資料的分析與解釋並將成果發表作一貫式的養成訓練，乃此課程安排的終極目標。

**226119 Methodology for Food Research 3 S E. L. Liaw、C. T. Huang
C. S. Lin, F**

This course is to describe experimental designs, general techniques and methodology related to food researches. Its contents include the knowledge of current research efforts on carbohydrates; lipids; proteins, and other components in foods.

226120 食品生化特論 2 選 黃卓治、下

本課程繼生物化學之課程，提供學生有關細胞層次（包括微生物、植物、動物）之基本生命科學有關知識，內容涵蘊細胞之主要構造功能及特性如氧化、還原化，討論胺基酸、寡糖類、高度不飽和脂肪酸、生物胺類之生物反應並討論細胞中與食品加工、貯藏、醱酵生產有密切關係之反應，著重於生化反應在食品加工中之意義。

226120 Advanced Food Biochemistry 2 S T. C. Huang, S

This course introduce knowledge of is to advanced food materials. Its contents include: structure and function of microbial; plant and animal cells; food processing plan and preservation related metabolic pathway; and biochemical reactions such as oxidation, reduction and hydroxylation. Functional properties of amino acids, oligo saccharide, polysaccharide, polyunsaturated fatty acids, biological amines will be emphasized.

226121 食品製程之自動控制 3 選 ，下

- 1.介紹各式自動控制元件的自動控制簡單原理，如何將各組元件組成自動控制機械。並說明其操作原理，課程將以成功的產品作例子，以投影片與幻燈片，解釋自動化生產的實務操作。
- 2.介紹反饋系統的觀念和其數學模擬技巧，轉換函數和狀態空間法於控制系統上的分析和設計，瞬時反應分析法，根軌分析法，頻率反應分析法，非線性控制系統。
- 3.指導圖控軟體操作之方法與設計，並要求學生學習操作與設計，圖控軟體並應用在現有圖控設備上。

226121 Automatic Control in Food Processing 3 S ,S

This course is to introduce different types of automatic control units and its operation methods. Its contents include: transient-response analysis; root-locus method; frequency responses method; and non-linear control system.

226122 食品經營特論 2 選 ,下

課程內容首先介紹食品工廠或經營之主要因素一人之相關問題，如員工、顧客心理、人際關係、溝通技巧、領導統御。進而說明企業單位人事組織、架構與運作方式。另外涵概產品行銷策略、食品市場特色、市場調查技巧及生產管理，讓學生培養未來在管理階層中，應據具備之決策能力、財務報表、成本會計之基礎理論與運作方法，了解企業之財務狀況、經營成果，建立成本概念。

226122 Food Management 2 S ,S

This course is to teach management concepts and skills in food industry. Its contents include: organization; communication; sales and marketing; financial and accounting; human resource management; and production management.

226123 最適化在食品科技之應用 3 選 林貞信、下

由於能源成本的增加及環保意識的覺醒，造成食品工業在食品製造及加工程序的顯著改變，以適應相對帶來的限制；為了得到最佳的生產環境和最大的生產利潤，及配合這些食品製造及加工程序的改變，使得工廠設計、操作方法及條件得做必要的修正。本課程將針對最適化背景的介紹(什麼是最適化、為什麼要最適化及最適化基本的特色)、運用的原理(方程式介紹、數值方法應用)以及作個案研究以練習實際問題等方式來了解最適化對食品科技的重要性。

226123 Applications of Optimization in Food Science and Technology 3 S J. S.Lin, S

This course is to provide students with concepts and applications of optimization in food science and technology. Its contents include: introduction of optimization (what is it? why is it necessary? its fundamental features); theory of optimization (basic functions and numerical methods); and case studies of practical applications.

226124 微生物生理與代謝 3 選 ,下

- 一、講授微生物生長所需之營養、微生物之增殖與死滅以及環境因子對微生物生長之影響等在生理上之關係。
- 二、講授微生物對物質的代謝，諸如能源與生長的關係，微生物之好氣代謝與嫌氣代謝、微生物之醱酵及呼吸等在代謝上之關係。

226124 Physiology and metabolism of microbes 3 S ,S

This course is to offer the knowledge and mechanism of microbes in terms of physiology and

metabolism. Its contents include: interrelationship between microbial nutrition and growth, microbial propagation and death; the effect of the environmental factors on microbial growth; the relationship between energy and growth; aerobic and anaerobic metabolism of microbe; and microbial fermentation.

226125 生化工程 2 選 , 上

本課教學目標為教授:物理化學基礎及實驗方法;應用物理化學於食品之材質分;食品生產、加工製程中各項物理化學性質之變化及其對最後製成品之影響;最終達成使學生具備能力以開發具高穩定、非凡營養價值、良好醫療保健效果之新型食品。教授對象為食品系研究生。課程將涵蓋:1.基礎熱力學—包含熱力學第一、第二、第三定律,狀態函數熱性質及自由能,相變化與相平衡,以及溶液之熱力學模式。2.食品加工程序中,分子之交互作用—包含凡得瓦爾(Vander Waals)力、氫鍵,膠體(colloid)電化學性質溶液活性(activity)及化學潛勢(chemical potential),水活性,蛋白質、碳水化合物與澱粉之水合熱力、動力學。3.凝膠(gel)與乳液(emulsion)凝膠之組合、結構分析,凝膠之機械與光譜性質,凝膠形成動力學;乳液之穩定性,食品乳化劑,微膠囊化(microencapsulation)技術應用。4.食品成份結構分析技術—流變性質測定(或稱組織測定),X射線繞射(XRD),電子顯微鏡(SEM,TEM),霍氏紅外光譜(FTIR),近紅外光譜(near-IR)、核磁共振(NMR),示差掃描熱分析(DSC)。5.基本食品物化特性—固態食品與液態食品之流變性質、機械性質,擠壓加工概述。6.食品結構與組織之關聯—肉品、烘焙食品之結構組織特性,食品加工過程中組織與結構之變化。

226125 Biochemical Engineering 2 S , S

This course is to introduce fundamental physical chemistry; experimental techniques; applied physical chemistry in material analysis of foods; changes of physicochemical properties in foods during processing, and the effect on final products. Its contents include: fundamental thermodynamics; molecular interaction in food processes; gels and emulsions; analytical techniques of structure and components of foods; fundamental physicochemical properties of food; and relationship between food structure and texture.

226126 藥理學特論 2 選 , 下

本課程主要以細胞及分子的領域為基礎,介紹最近的研究結果,例如藥物作用的感受體型式、信息傳遞途徑,中樞及自主神經的藥理,炎症、過敏、血小板功能以及化學療法等新知。

226126 Special Topics on Pharmacology 2 S , S

This course is to introduce the recent research information on pharmacology at cellular and molecular levels. Its contents include: receptor types; signal transduction pathways; CNS and autonomic pharmacology; pharmacology of inflammation; allergy; platelet functions; and chemotherapeutic approaches.

226127 分子病毒學 2 選 廖明輝、上

本課程的目的,在使學生瞭解獸醫分子病毒學的一般改概念,並探討病毒的複製機制、基本的分子生物學、致病機轉、宿主與寄生的關係及其免疫機制。

226127 Molecular Virology 2 S M. H. Liao, F

This course is to study the general concepts of veterinary medicine virology. Its contents include: the virus replication; basic molecular biology; pathogenesis; and relationship between hosts and parasites; and immune mechanism.

226128 魚病臨床微生物學 2 選 , 下

本課程提供魚類病原微生物之診斷理論與實用技術。內容函蓋 (1) 正確病歷登入, (2) 病材、病原妥適之收集、運輸及保存, (3) 實驗室之安全防護, (4) 各種病原, 包括細菌、黴菌及病毒之分離培養, (5) 快速精確之生化、免疫及分生技術之鑑定, (6) 藥物感受性測定

及正確藥物治療。

226128 Clinical Microbiology of Fish Diseases 2 S , S

This course is to provide a theoretical and practical framework for understanding the clinical microbiology in the field of aquatic animal health problems. Its contents include: history; collection, transportation, and preservation of pathogens and specimens; safety in the microbiological laboratories; isolation of various pathogens; rapid and accurate identification using morphological, biochemical, immunological and molecular biological methods; and antimicrobial sensitivity tests for drug therapy.

226129 林木生態生理學特論 2 選 , 下

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，養分及污染物對林木主要生理作用，水，溫度，養分及污染物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，生長，休眠及光呼吸作用的影響，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。

226129 Special Topics on Ecophysiology of Wood Plants 2 S , S

This course is to understand the effects of environmental factors, under normal as well as stressful conditions, of tree species. The environmental factors which will be addressed include solar radiation, water, temperature, nutrients, and pollutants. Its contents include: photosynthesis; transpiration; water and nutrient absorption; growth; dormancy and photorespiration; relationship between physiology and survival, growth and productivity; and adaptive mechanism of tree species to their habits.

226130 林木生態生理學特論實習 1 選 郭耀綸、下

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:

1. 氣溫、葉溫、太陽輻射、土壤水分、雨量、濕度及風之測定方法
2. 植物水勢之日變化
3. 林木光合作用日變化及其受環境因子之影響
4. 乾旱對林木生理作用之影響及林木之耐旱機制
5. 太陽輻射對林木形態發育及生理作用之影響

226130 Practice of Special on Ecophysiology of Wood Plants 1 S Y. L. Kuo, S

This lab session is to provide practical experiences in eco-physiology of woody plants with emphases on the field methods and instrumentation. Its contents include: measurement of 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; and effects of solar radiation on the morphological and physiological characteristics of trees.

226131 地理資訊系統特論 2 選 陳朝圳、上

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：

1. 地理資訊系統之基本組成。
2. 地理資料結構。

- 3.空間資料之收集與處理。 4.空間資料管理。
 5.森林資源地理資訊系統之架構。 6.森林資源地理資訊系統之執行與分析。
 7.空間圖藉資訊之產生。 8.地理資訊之應用與未來趨勢。

226131 Special Topics on Geographic Information Systems 2 S C. T. Chen, F

This course is to offer a technique training about how to analyze spatial data, and how to use GIS to solve the problems of forest resources. Its contents include: 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 future trends.

226132 地理資訊系統特論實習 1 選 陳朝圳、上

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。

- 1.地理資訊系統與 ARC/INFO。 2.地理資訊系統計畫之擬定。
 3.如何於 ARC/INFO 中取得空間資料。 4.空間資料之位相關係之建立。
 5.如何於 ARC/INFO 中取得屬性資料。 6.地理資料庫之管理。
 7.地理資料分析。 8.地理資訊之展示。
 9.應用實例。

226132 Practice of Special Topics on Geographic Information Systems 1 S C. T. Chen, F

This course is to train students how to build and use the spatial information by employing ARC/INFO software. Its contents include: introduction to GIS and ARC/INFO; starting your ARC/INFO project; getting spatial data from ARC/INFO; making spatial data usable; getting attribute data from ARC/INFO; managing the database; performing geographic analysis; interpreting the results of the analysis; and GIS application.

226133 遊憩與觀光之理論基礎 3 選 、下

本課程嘗試引導學生閱讀與課堂討論過去三十年來有關於遊憩與休閒的研究文獻，包括理論性與實徵性的。此課程之目的有三：(1)促使學生了解休閒與遊憩在社會層面的功能；(2)促使學生了解休閒與遊憩在個體層面的功能；(3)使學生熟悉休閒、遊憩方面學術期刊所刊載的研究成果。

226133 Foundations of Recreation and Leisure Studies 3 S , S

This course is to guide students, through reading and class discussion, to be familiar with a large number of conceptual and empirically-based studies in recreation and leisure for the past three decades. Its contents include: functions of leisure and recreation; functions of leisure and recreation for individuals; and major research journal outlets in recreation and leisure studies.

226134 休閒研究方法論 3 選 、下

本課程將提供研究生完成其論文所需的基本研究方法知識與技能。這些技巧包括(1)研究問題之建構(2)研究設計(3)資料搜集與分析的方法(4)研究結果的展現與報告的撰寫。此外，本課程內容除了傳授與研究方法有關的知識外，還特別著重於實例的操練，包括使用電腦軟體進行資料的處理與分析。

226134 Research Methods in Leisure Studies 3 S , S

This course is to provide the basic knowledge and skills in leisure studies. Its contents include: problem development; study design; methods of data collection and analysis; and research

findings and conclusions. In addition, this course will emphasize, through examples and practice, on the application of statistical software to analyze data.

226135 森林生態學特論 2 選 楊勝任、下

本課程主要介紹植群分布與相關環境因子研究法。其授課內容包括介紹、植群分析的基礎概念、野外植群描述方法、原始資料矩陣特質、相似性與相異性計算、分布序列法、極點分布序列、生態報告研讀、DCA 軟體介紹、Z-M 學派植物社會分類、列表比較法、植群分類法、數式分類法。

226135 Forest Ecology 2 S S. Z. Yang, S

The course is to introduce the basic concepts of forest ecosystem, i.e., composition, classification, distribution, and succession of vegetation relative to environmental factors. Its contents includes: consideration in vegetation analysis; description of vegetation in the field; raw data matrix properties; measurement of similarity and dissimilarity; ordination (polar ordination); ordination (Bray and Cutis); introduction of DCA program; Z-M school, tabular comparison, classification of vegetation, numerical classification; and case studies.

226136 森林生態學實習 1 選 楊勝任、下

本課程的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、結果解釋等等。

226136 Practice of Forest Ecology 1 S S. Z. Yang, S

This course is to offer students practice on sampling methods and data preparations using computer software. Its contents include: 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, interpretations of results.

226137 第二外語（西班牙或法語） 4 選

本課程供初學西班牙文同學選修。內容包括發音（字母、母音、子音、拼音、音節、重音及音調）、會話練習、簡單課文選讀與文法等。讓同學具聽說讀寫基本能力。

226137 Second Foreign Language 4 S
(Spanish or French)

The course is designed for the beginning learners to learn Spanish or French. It contains pronunciation (alphabet, vowel, consonant, spelling, syllable, accent and intonation), conversation practice, selected readings and grammar etc. It aims to help students gain basic four skills of Spanish or French, listening, speaking, reading and writing.

226138 第二外語（日文二） 2 選

配合初級日語的課文課程內容，由淺入深導入文法、句型，再輔入適當讀物及課後作業，務使學生能充分理解，吸收並應用之。另外並定期舉行聽寫等測驗，俾始能達到聽、說、讀、寫並進的效果。

226138 Second Foreign Language 2 S
(Japanese)

In coordination with the contents of the elementary Japanese, grammar, sentence patterns are introduced to students in a planned way and selected reading materials for the better understanding of this language. In addition, tests in Japanese such as listening comprehension and writing are offered regularly for the object of improving their ability to know Japanese.

226139 綜合害蟲管理特論 3 選

討論農業生態系統中重要作物之病原、害蟲與其他有害生物綜合管理的策略與方法。

226139 Special Topics on Integrated Pest Management 3 S

The strategies and tactics of integrated management of pests in agricultural ecology of important crops are discussed.

226140 免疫學概論 3 選 李嘉偉 上

本課程的主要目的是提供學生一個對免疫學的基本概念，隨著農場管理技術的進步，家畜的飼養密度和生長表現都持續的在提升，在這種情況下，動物更容易受到傳染病的危害而對產業造成嚴重的經濟損失，動物本身的免疫力在抵抗外來病原菌和病毒上扮演著重要的角色，本課程式著重在介紹免疫系統、各種免疫反應、宿主及病原交互作用、及疫苗、獲得這方面的知識能讓學生了解農場的疾病防治。

226140 General Immunology 3 S J. Lee F

The objective of this course is to provide the students a basic background of immunology. The housing density and the growth performance of domestic animals keep increasing as the consequence of advanced farm management. Under this circumstance, animals are more susceptible to infectious diseases which lead to significant economic losses to the industry. The immunity plays a pivotal role in protecting the animals from invading pathogens and viruses. This course is focused on the introduction of immune system, different types of immune responses, host-pathogen interaction, and vaccination. Acquisition of such knowledge is fundamental for the students to understand disease-controlling strategies of animal husbandry.

226141 統計取樣法 2 選 顏才博 上

此課程主要在介紹各種統計取樣法，及其在自然資源調查與農業研究上之應用。學生將學習各種取樣設計原理、其運用時之條件限制、相關之統計分析、樣本數之決定及可信度之運算。在課程中除了講解理論外亦配合內容使用統計軟體，以期學生能瞭解各種統計取樣法，並正確地運用於自然資源調查與相關之研究。

226141 Sampling Methods 2 S T. B. Yen, F

Offer English and Chinese sections. Prereq., basic Biometrics or equiv.; consent of instructor. The objective of this course is to introduce different sampling methods and practical use in the natural resources inventory and other agricultural researches. Students will be familiar with various sampling designs employed to inventory, their utility and associated underlying assumptions as well as computing estimators and their associated measures of reliability with sample size determination in particular sampling design. Students will gain insight and understanding about the process of planning and executing an inventory with the appropriate use of certain statistical procedure over others in specific situations.

226142 國際漁業合作特論 2 選 李栢濤，下

本課程旨在教導學生瞭解目前國際漁業與水產養殖之發展趨勢，以及我國提供技術協助非洲、中南美洲與加勒比海以及亞太地區等開發中國家發展漁業與水產養殖事業。藉由計畫週期之方法論，對於成功與不成功案例進行比較分析，俾能對我國對外漁業與水產養殖合作之整體運作策略與模式有所認識。

226142 Special Topic on International Fishery Cooperation 2 S P. P. Li, S

The curriculum aims to instruct the students to recognize the current development trend of international fisheries and aquaculture industries. The Republic of China (Taiwan) provides technical assistance in terms of fisheries and aquaculture techniques for developing countries in Africa, Central and South America, Caribbean as well as Asia and Pacific region. By way of the

methodologies of Project Cycle executed, engaging in comparative analysis on successful and unsuccessful project, to facilitate understand the comprehensive operational strategies and approaches on Taiwan's international fisheries and aquaculture cooperation.

226143 植物病害防治特論 2 選 何婉清，上

植物病害防治特論是由流行病學的觀點來探討植物病害的預防及治療措施，其防治原理則分別為拒病、避病、降低或除去植物病原菌的接種濃度，增強寄主的抗病及免疫能力，直接應用各種措施來保護寄主免於病原菌的侵入，以及綜合應用上述各防治原理的整合防治措施。包括法規防治、栽培防治、化學及物理防治、生物防治以及綜合防治等。

226143 Special Topics on Plant Diseases Control 2 S W. C. Ho, F

Special topics on plant diseases control are intended to review and discuss the control measures of plant diseases. The various control methods can be classified as regulatory, cultural, biological, physical and chemical measures. The concept of integrated plant disease control is also discussed.

226144 植物病害防治特論實驗 1 選 何婉清，上

以預防重於防治的觀點，探討植物病害的發生預測、診斷和防治技術，其方法包括發生預測技術，傳統及分子生物之病害診斷技術，法規防治措施，栽培防治法，物理及化學防治技術，生物防治技術以及綜合防治措施等。其防治原理的應用則包括拒病、避病、降低或除去植物病原菌的接種濃度，增強寄主的抗病及免疫能力，直接應用各種措施來保護寄主免於病原菌侵入，以及綜合應用上述各種防治原理的綜合防治措施。

226144 Lab. Special Topics on Plant Diseases Control 1 S W. C. Ho, F

This course offers a practical practices for plant diseases forecasting and control measures which included regulatory, cultural, biological, physical and chemical methods.

226145 景觀規劃特論 3 選 羅清吉 上

本課程主要教學目的,在使學生熟習景觀規劃的相關理論與程序，了解景觀規劃之方法與技巧，並能熟練運用景觀規劃之電腦軟體，應用於相關之規劃及研究案例。

226145 Special Topics on Landscape Planning 3 S Robert. C. Lo, F

The aim of "Special Topics on Landscape Planning" program is to assist the students to be familiar with related theories and procedures, skills, methodologies and approaches of landscape planning, as well as developing a high level of competence in computer application in planning.

The course contents include :

- 1.Theories of landscape planning
- 2.Planning methodologies and approaches
- 3.Planning practices
- 4.Case studies
- 5.Software applications for landscape planning

226146 畜產污染防治與資源利用 2 選 夏良宙，上

本課程目的在於介紹現存畜牧廢水處理系統，尋求經濟可行且因地制宜之系統，畜產廢棄物之減量與環境影響評估，畜產廢棄物之資源化利用，未來環保畜舍之評估，進而朝向清潔生產之目標，以達到畜牧永續經營之目的。

160146 Livestock Pollution Control 2 S L. C. Hsia, F

and Resource Utilization

This course is to introduce the currently available waste water treatment systems and to explore the feasibility of developing waste water treatment systems that are economical and practical to meet the local needs. This course will also introduce the methods to reduce waste and to evaluate its environmental impacts. Focuses will also be placed on utilization of animal waste as resources, evaluation of the set-up for environmentally-sound animal housing facilities, and attainment of the sustainable management of animal industries by ensuring clean production of animals.

- 226145 畜舍策劃特論** 2 選 夏良宙，上
本課程之目的為使學生能將各類畜牧基本資料運用於畜舍策畫，並使學生能有畜舍策畫之技術。課程內容包括：(1)簡介(2)畜舍策畫之基本知識(3)畜舍策畫所需基本資料(4)通風(5)基本機電(6)基本供水(7)牛舍策畫(8)羊舍策畫(9)豬舍策畫(10)禽舍策畫(11)狗舍策畫(12)貓舍策畫(13)野生動物舍策畫。
- 226145 Special Topics on Animal House Arrangement** 2 S L.C. Hsia, F
The purpose of this course is to let the students to know how to arrange an animal house on the knowledge of animal production and others. The following topics included in the course. (1)Introduction (2)Basic knowledge for animal house arrangement (3)Basic information (4)Ventilation (5)General electric system (6)General water system (7)Cattle house (8)Sheep and goat house (9)Pig house (10)Poultry house (11)Dog house (12)Cat house (13)Wild animal house.
- 226146 訊息傳遞** 2 選 劉宏仁，下
本課程將介紹細胞外之分子與細胞膜上之接受體之交互作用，使細胞膜之接受體活化，將胞外之訊號擴大後傳遞到胞內。
- 226146 Signal Transductions** 2 S H. J. Liu, S
This curriculum introduces the interaction of an extra cellular legend with a Tran membrane protein that has domains on both sides of the membrane. Binding of legend converts the receptor from an inactive to an active form. A signal has in effect been amplified and transuded across the membrane.
- 226147 基因調控** 2 選 劉宏仁，上
本課程將著重於反式作用因子如何與順式作用的 DNA 序列交互作用以便調控細胞內之基因表達。
- 226147 Gene Regulation** 2 S H. J. Liu, F
The curriculum emphasizes the interaction of both trans-acting factors and cist-acting DNA sequences in order to regulate gene expression in cells.
- 226148 高級英文** 0 選 邱亞伯，下
本課程期望對於學生在英文科學論文寫作上帶來正確且幽雅的英文寫作方式；其中包含文法、字彙的使用及貫通全文的字彙使用（如副詞、介係詞與連接詞等）。英文的科學論文代表著科學的正式文書，其中包含了期刊論文、報告與學位論文等。本課程將著重於密集的英文科學文獻閱讀，包含了一般英文寫作中容易犯錯的文法矯正。
- 226148 Advanced English** 0 S A. L. Charles, S
The course is intended to help students to write scientific English in a more correct way, in an effective way, and with some fluidity and also elegance. Correctness involves grammar, effectiveness involves communication through vocabulary and fluidity with elegance involves the use of the linkers (adverbs, prepositions, conjunctions). Scientific English is meant for scientific documents, that is, for articles, reports, theses; all these in a formal presentation. The course will

focus on intensive readings of more advanced scientific and technical texts in class as well as extensive reading at home. Remedial grammar will be covered as required.

226149 高級中文

0 選

劉曼麗

通過漢語拼音學習中文正確發音，並輔以英文詳細解說每一內容之意義，但授課主要目的為有能力聽、讀、說中文，故未及於寫（中文字）的部分。除教本中所有的例句與課文均加以充分練習之外，且於每單元教授結束後，令每一位同學以兩人為一組，即席會話表演，不僅加深印象，並確認其確實懂得如何靈活運用所學內容，以收具體之學習效果。

226149 Advanced Chinese

0 S

Mien- Li Liu

This course aims at teaching students the correct Chinese pronunciation through the use of the Chinese Phonetic Alphabet and to explain the contents at length in English. The main purpose of this course is to enhance students' ability in listening, reading and speaking, but not writing, Chinese. In addition to practicing the sampled sentences and other contents in the textbook, students will be grouped into pairs to practice conversation after finishing the instruction of each unit. This practice will not only enhance students' memory but also ensure students' ability to effectively apply the knowledge that they learn into practice. This will improve the effectiveness of students' learning of Chinese.

熱帶農業暨國際合作系博士班

(一)教育目標

1. 促進農、林、漁、牧各方面之相關研究。
2. 培育高級專業人才，增進獨立研究能力。
3. 提升農、林、養殖及畜牧業之專業技術。
4. 協助政府培訓援助友邦的農業技術人才。

(二)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		備 註	
		上	上	下	下	上	下		
專題討論 Seminar	4	1	1	1	1				
國際農業發展趨勢特論 Special Topics on Developmenting Trends of International Agriculture	4	4						與「農業政策 與經濟特論」 二選一	
農業政策與經濟特論 Special Topics on Agriculture Policies and Economics	4		4					與「國際農業 發展趨勢特 論」二選一	
應用華語(一) Applied Mandarin (I)	1	1						外籍生必修，1 學分 2 小時	
應用華語(二) Applied Mandarin (II)	1		1					外籍生必修，1 學分 2 小時	
博士論文 Dissertation	12					6	6		
合 計	20	5	5	1	1	6	6	本 國 生	
	22	6	6	1	1	6	6	外 籍 生	

(三) 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	
高等昆蟲基礎學 Advanced Foundations in Entomology	3	3				熱帶農業暨國際合作系
高等昆蟲病理學 Advanced Insect Pathology	3	3				熱帶農業暨國際合作系
自然資源之利用與生產 Utilization and Production of Natural Resources	3		3			熱帶農業暨國際合作系
農業研究方法與試驗設計 Agriculture Research Methods and Experimental Design	3	3				熱帶農業暨國際合作系
農業與文化 Agriculture and Culture	3		3			熱帶農業暨國際合作系
生物多樣化與演化 Biodiversity and Evolution	4			4		熱帶農業暨國際合作系
昆蟲傳播植物病原學 Insect Transmission of Plant Pathogens	3			3		熱帶農業暨國際合作系
高等保育生物學 Advanced Conservation Biology	3				3	熱帶農業暨國際合作系
穿透式電子顯微鏡特論 Special Topic of Transmission Electron Microscopy (TEM)	3		3			熱帶農業暨國際合作系
高等蔬菜作物 Advanced Olericulture	3	3				熱帶農業暨國際合作系
科技研究方法 Scientific Research Methods	2		2			熱帶農業暨國際合作系
試驗設計及數據分析 Experimental Design and Data Analysis	2	2				熱帶農業暨國際合作系
草坪生理與管理 Turf Physiology and Management	2			2		熱帶農業暨國際合作系
迴歸分析 Regression Analysis	2			2		熱帶農業暨國際合作系
數值分類學 Numerical Taxonomy	2			2		生物資源研究所
分子診斷技術學 Molecular-based Diagnostic Technique	2	2				生物科技研究所

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備註
		上	下	上	下	
酵素與蛋白質工程學 Enzyme and Protein Engineering	2	2				生物科技研究所
蘭花學 Orchidology	3			3		農園生產系
高等熱帶果樹 Advanced Tropical Fruits Science	3	3				農園生產系
高等花卉學特論 Advanced Floriculture	3	3				農園生產系
高等蔬菜作物有害生物管理 Advanced Vegetable Crop Pest Management	3		3			農園生產系
高等魚類與漁業生物學 Advanced Fish and Fisheries Biology	3	3				水產養殖系
高等海洋魚類生物學 Advanced the Biology of Marine Fishes	3		3			水產養殖系
乳牛繁殖學 Reproduction of dairy cattle	3		3			畜產系
芻料營養評估 Forage Evaluation	3		3			畜產系
乳牛哺乳學 Lactation and Milking of Dairy Cattle	3			3		畜產系
肉牛生產學 Beef cattle production	2			2		畜產系
乳牛牧草學 Grass for Dairy Cattle	2			2		畜產系
真菌學特論 Special Topics on Mycology	2	2				植物醫學護系
分子病毒學 Molecular Virology	2	2				獸醫學系
基因表現系統 Genetic Expression System	2	2				獸醫學系

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備註
		上	下	上	下	
鄉村研究之理論架構及實證應用 Theoretical Frameworks and Empirical Application in Rural Research	3	3				農企業管理系
人口與糧食 Population and Food	3				3	農企業管理系
產業關聯經濟	2	2				農企業管理系
高等人力資源管理 Advanced Human Resource Management						農企業管理系
建築暨景觀風水特論 Special Topics on Architecture and Landscape Architecture Geomancy (Fengshui)	3		3			景觀暨遊憩管理研究所
日式園林藝術特論 Special Topics on Japanese Garden Art	2				2	景觀暨遊憩管理研究所
合 計	93	36	26	23	8	

*附註:本系選修課程包含全校博士班選修課。

國立屏東科技大學 熱帶農業暨國際合作系 博士班課程規劃表

學年	第一學年				第二學年				學分總計
學期	第一學期		第二學期		第一學期		第二學期		
修別	科目	學分	科目	學分	科目	學分	科目	學分	
必修	專題討論 農業政策與經濟特論 國際農業特論 *與「農業政策與經濟特論」二選一 應用華語(一)--外籍生	1 4 4 1	專題討論 應用華語(二)--外籍生	1 1	專題討論	1	專題討論	1	
小計		外籍生 6 本國生 5		外籍生 2 本國生 1		1		1	10
選修	高等昆蟲基礎學 高等昆蟲病理學 農業研究方法與試驗設計 高等蔬菜作物 試驗設計及數據分析 分子診斷技術學 酵素與蛋白質工程學 高等熱帶果樹 高等花卉學特論 高等魚類與漁業生物學 真菌學特論 分子病毒學 基因表現系統	3 3 3 3 2 2 3 3 3 2 2 2	自然資源之利用與生產 農業與文化 穿透式電子顯微鏡特論 科技研究方法 高等蔬菜作物有害生物管理 高等海洋魚類生物學 乳牛繁殖學 芻料營養評估 建築暨景觀風水特論	3 3 3 2 3 3 3 3 3	生物多樣化與演化 昆蟲傳播植物病原學 草坪生理與管理 迴歸分析 數值分類學 蘭花學 乳牛哺乳學 肉牛生產學 乳牛牧草學 日式園林藝術特論	4 3 2 2 3 3 2 2 2	高等保育生物學 人口與糧食	3 3	
小計		33		26		25		6	90

國立屏東科技大學 熱帶農業暨國際合作系 博士班課程規劃表

學年	第一學年				第二學年				學分總計
	第一學期		第二學期		第一學期		第二學期		
學期	科目	學分	科目	學分	科目	學分	科目	學分	
選修	鄉村研究之理論架構及實證應用	3							
	產業關聯經濟	2							
小計		5							5

國立屏東科技大學 熱帶農業暨國際合作系 博士班課程規劃表

學年	第三學年								學分總計
	第一學期		第二學期						
學期	科目	學分	科目	學分					
必修	博士論文	6	博士論文	6					
小計		6		6					12
選修									
小計									

註：本系博士班學生至少應修滿 30 學分始得畢業(其中本國生必修應修 22 學分，選修應修 8 學分)
(外籍生必修應修 24 學分，選修應修 6 學分)

熱帶農業暨國際合作系

Department of Tropical Agriculture and International Cooperation

課程代號 Course Number	科目名稱(中文) Course (Chinese)	學分 Credit	科目名稱(英文) Course (English)	頁次 Page
專業必修科目 Required Courses				
229001	專題討論	6	Seminar	
229003	國際農業發展趨勢特論	4	Special Topics on Agriculture Policies and Economics	
229004	農業政策與經濟特論	4	Special Topics on International Agriculture	
專業選修科目 Elective Courses				
229006	高等昆蟲病理學	3	Advanced Insect Pathology	
229014	蘭花學	3	Orchidology	
229015	高等蔬菜作物	3	Advanced Olericulture	
229017	高等魚類與漁業生物學	3	Advanced Fish and Fisheries Biology	
229018	高等海洋魚類生物學	3	Advanced the Biology of Marine Fishes	
229019	高等保育生物學	3	Advanced Conservation Biology	
229020	真菌學特論	2	Special Topics on Mycology	
229021	酵素與蛋白質工程學	2	Enzyme and Protein Engineering	
229022	分子病毒學	2	Molecular Virology	
229023	基因表現系統	2	Genetic Expression System	
229024	分子診斷技術學	2	Molecular-Based Diagnostic Technique	
229025	鄉村研究理論架構及實證應用	3	Theoretical Frameworks and Empirical Application in Rural Research	
229026	高等熱帶果樹	3	Advanced Tropical Fruits Science	
229027	高等花卉學特論	2	Advanced Floriculture	
229028	高等生物統計	2	Advanced Biometry	
229029	芻料營養評估	3	Forage Evaluation	
229030	日式園林藝術特論	2	Special Topics on Japanese Garden Art	
229031	建築暨景觀風水特論	2	Special Topics on Architecture and Landscape Architecture Geomancy(Fengshui)	

熱帶農業暨國際合作系

Department of Tropical Agriculture and International Cooperation

一、必修科目 Required Courses

229001 專題討論 6 必

本課程旨在訓練研究生對資料蒐集、整理及表達的能力。學生選擇與論文有關的題目，蒐集文獻、閱讀、整理成摘要，然後提出報告討論，並由參與教師評分。

229001 Seminar 6 R

This course is to train graduate students the ability in searching literature, organizing materials and presentation. Students are required to select a topic in their thesis, search and review literature, and draw up an abstract and a final report as well. Presentations are scheduled twice a semester for every student.

229003 國際農業發展趨勢特論 4 必 上

本課程將介紹農業政策和經濟,其主題包括經濟政策、農業發展、當前農業問題與政策、農地政策、農田水利政策、農產運銷、農業金融、農民組織、農業推廣、農業科技、加入 WTO 對農業之影響及其因應對策

229003 Special Topics on Developing 4 R F

Trends of International Agriculture

This course is to introduce agricultural policies and economics in Taiwan. Its contents include: policies on economics, agricultural development, current problems and policies on agriculture, policies on farmland, policies on irrigation, marketing of agricultural products, agricultural finance, farmers' organizations, agricultural extension, agricultural technology, and impacts and responses of Taiwan's agriculture after its accession to WTO.

229004 農業政策與經濟特論 4 必 , 上

本課程的目的是讓學生得知當前最近的國際農業發展情形，同時協助學生建立最新的世界，糧食生產及消費之世界觀。本課程之內容包括：(1)世界糧食供應情形，(2)世界穀類之貿易，(3)世界的肉類生產，(4)世界肥料之生產及消耗，(5)非洲的糧食供應現況，(6)世界不同國家人口別的糧食供應情形，(7)非洲的農藥改進，(8)針對第三世界糧食生產不足之解決方法。

Special Topics on

229004 Special Topics on Agriculture 4 R , F

Policies and Economics

This course is to introduce the latest development of international agriculture and to help students acquire the updated global views on agricultural production. Its contents include: crop and food supply situations in the world, cereal in the world trade, global meat production, global fertilizer

supply and consumption, food supply situation and crop prospects in sub-Saharan Africa and other countries, agricultural reform in Africa, and causes and solutions of under-nutrition in the third world.

二、選修科目 Elective Courses

229006 高等昆蟲病理學 3 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。

229006 Advanced Insect Pathology 3 S , 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.

229014 蘭花學 3 選 陳福旗
本課程在教授有關蘭花研究及生產之知識，內容包括生長習性與構造、分類與地理分佈、礦物營養、開花生理、光合作用、菌根菌與共生作用、種子發芽及幼苗生長、栽培與管理、遺傳與育種、重要蘭屬介紹、病蟲害管理、切花彩收後生理。

229014 Orchidology 3 S F. C. Chen
This course is to introduce the knowledge of orchid research and production. Its contents include: growth habitats, classification and distribution, mineral nutrition, flowering physiology, photosynthesis, mycorrhizae and symbiosis, seed germination and seedling growth, cultivation and management, genetics and breeding, pests and disease management, and postharvest physiology.

229015 高等蔬菜作物 3 選 , 上
本課程提供大學部高年級及研究生研習。課程內容討論有關蔬菜的栽培生理及遺傳育種特性、過去本省重要蔬菜發展之源由、現今蔬菜生產之特色及展望。

229015 Advanced Vegetable Crops 3 S S
This course is to introduce the physiology and genetic breeding of vegetable crops; origin and characteristics of today's vegetable industry in Taiwan, and special features and uniqueness of vegetable production in Taiwan.

229017 高等魚類與漁業生物學 3 選 , 上
本課程之重點在於介紹魚類對環境之適應現象及調節機制，包括形態、行為及生理等層面，漁業生物學特性，資源盛衰及管理。

229017 Advanced Fish and Fisheries Biology 3 S , F

This course is to introduce the phenomena and regulatory mechanisms involved in the adaptation of fishes to environments in terms of morphology, behavior and physiology. The fundamental aspects of fishery biology and resource management will further be discussed.

229018 高等海洋魚類生物學 3 選 , 下

本課程之教學重點在於海水魚與海洋環境之關係，內容包括環境特性，海水魚棲息及適應之多樣性，形態行為與環境適應之關連性等。

229018 Advanced the Biology of Marine Fishes 3 S , S

This course is to introduce the inter-relationship between marine teleosts and their environments. Its contents include: the nature and characteristics of environments, diversification of habitats, adaptation patterns of marine fishes, and correlation of fish morphology and behaviors with the adaptation patterns to environmental changes.

229019 高等保育生物學 3 選 , 下

高等保育生物學原理；熱帶林之生物多樣性及生物質量；保育之策略。

229019 Advanced Conservation Biology 3 S , S

This course is to introduce the principles of conservation biology, diversity and biomass in tropical forest; and strategies for conservation.

229020 真菌學特論 2 選 , 上

本課程針對真菌之生理生化及其代謝之闡述，以說明真菌之細胞壁合成及分解，與孢子發芽、菌絲生長的關係。真菌營養生長轉變生殖生長之內外影響因子與生化代謝之生理關係。

229020 Special Topics on Mycology 2 S , F

This course is to elaborate the physiology, biochemistry and metabolism of fungi. It will emphasize the biosynthesis and decomposition of cell walls of fungi, and the relationship among sporulation, germination and mycelial growth. Additional emphasis will also be placed in discussing the inner and outer influencing factors that affects the conversion from vegetative growth to reproductive growth of fungi.

229021 酵素與蛋白質工程學 2 選

本課程將介紹常用於生物科技酵素之種類及功能，以及探討蛋白質之純化、結構、功能及其應用。

229021 Enzyme and Protein Engineering 2 S

The curriculum introduces the classification and function of enzymes used in biotech and focus on the purification, structure, function and application of proteins.

229022 分子病毒學 2 選

本課程的目的，在使學生瞭解獸醫分子病毒學的一般概念，並探討病毒的複製機制、基本的分子生物學、致病機轉、宿主與寄生的關係及其免疫機制。

229022 Molecular Virology 2 S

The purpose of this course is to study the general concepts of basic and veterinary medicine virology, whereas describes the virus replication, basic molecular biology, pathogenesis, relationship of host and parasite and immune mechanism.

229023 基因表現系統 2 選

本課程將著重於原核基因及真核基因之表達，並介紹常用之宿主表達系統。

229023 Genetic Expression System 2 S

This class emphasizes the expression of prokaryotic and eukaryotic genes, and introduce the common use of host expression system.

229024 分子診斷技術學 2 選

本課程將介紹分子生物技術檢測微生物、動植物之基因及其表面抗原。

229024 Molecular-based Diagnostic 2 S

Technique

The course introduces the applications of molecular-based techniques to detect the genes and surface antigens of microbial, animals and plants.

229025 鄉村研究理論架構及實證 3 選
應用

本課程旨在增加學生對於鄉村研究流程之理論、發展假說與應用之間連結的認知。特別強調使用定性研究方法從事鄉村研究。藉由導讀、課程討論研討與評論對理論與實證研究有進一步的認知，並增加學生在組織及課程研討的技能及經驗。

229025 Theoretical Frameworks and 3 S
Empirical Application in Rural
Research

The goal of this course is to increase student knowledge and understanding of the research process that links theory and hypothesis development and empirical applications in rural areas. Special emphasis will be placed on the use of qualitative methods in conducting research in the rural area. Students will enhance their skills and obtain experience in organizing and leading class discussions; reading, interpreting and integrating theoretical and empirical studies; writing a book review; and writing essays that integrate ideas from assigned materials with student evaluations of the materials.

229026 高等熱帶果樹 3 選

本課程針對熱帶果樹之產地與地區、台灣與世界熱帶果樹之生產、種原交流、品種及育種、繁殖－無性與有性、芽接與嫁接之地區差異、砧木之演進、生育與環境、栽培管理－傳統與現代、產期調控－從熱帶柑橘到龍眼之品種、產能－從芒果之授粉昆蟲飼養至百香果之自交親和性、營養－與品質及生理障礙、開花生理與地區效應、品質控制－環境與栽培技術之效應、採後處理與檢疫、國際市場與障礙等加以論述。

229026 Advanced Tropical Fruits 3 S
Science

The course covers special topics of tropical fruit crops on production and locations, fruit production in Taiwan and world, germplasm collections and breeding, propagation—budding, grafting and rootstock, growth and environments, traditional and current cultural managements, forcing culture in the tropics and subtropics, bearing efficiency, nutrition and quality, flowering physiology and location effect, postharvest and quarantines, international trade and barrier.

229027 高等花卉學特論 2 選

本課程之目的乃是深入探討花卉園藝技術，主要內容為：1、花卉種源保存與開發。2、花卉種苗生產技術。3、花卉栽培介質與養份、水分管理。4、花卉開花生理與調節。5、花卉商品設計與流通。6、花卉栽培技術各論。

229027 Advanced Floriculture 2 S

This course is designed for advanced study on floriculture of specific topics. They are: 1. Germplasm preservation and development. 2. Techniques of floral seeds and seedling propagation. 3. Management of substrates, fertilization and water in floriculture. 4. Flowering physiology and regulation. 5. Product design and sales. 6. Flower forcing of special crops.

229028 高等生物統計 2 選

本課程旨在使學生能了解並利用適當之統計方法來分析資料及陳述，表示資料，以獲得正確的結論與資訊。所介紹之統計方法包括敘述性統計，Z-test，t-test，x²-test, ANOVA,及其他相關性統計方法。

229028 Advanced Biometry 2 S

This course teaches students the understanding and usage of proper methods in analyzing data to obtain correct conclusion and information. The statistical methods taught in this course include descriptive statistics, Z-test, T-test F- test, x²-test, ANOVA, and other related fields.

229029 芻料營養評估 3 選 夏良宙、上

芻料營養評估需要非常精細又複雜之技術，本課程之主旨主要是提供詳盡之方法，去做芻料之營養評估，課程內容包含下列主題：芻料評估對人畜之重要性；以動物成績為飼料評估之標準；芻料能量計算；能量評估及芻料代謝管理；芻料蛋白質計算；以酵素方法計算消化率；芻料降解計算；物理化學的方法評估芻料營養；氣體生產堆積法評估芻料；礦物質；維生素；抗營養因子；芻料攝取量評估之重要性；飼料之動物病原菌；脂質化學分析；動物飼料之多醣化學評估。

229029 Forage Evaluation 3 S Liang Chou Hsia、上

Forage evaluation is a complex technologies. The purpose of this course is to provide the detailed ways on how to evaluate forage. The course will include the following topics, which are the major ways to evaluate the quality of roughage. The detailed contents include: The importance of forage evaluation for humans and animals; Animal performance as the criterion for feed evaluation; Estimating the energy value of forages; Energy evaluation, management of forage metabolism; Estimating the protein value of forages; Enzyme techniques for estimate digestibility; The in situ techniques for the estimation of forage degradability; Physicochemical approaches; Cumulative gas-production techniques for forage evaluation; Mineral; Vitamin; Antinutrition

factors; The importance of intakes in feed evaluation; Animal pathogen in feed; Chemical analysis of lipid fractions; Chemical evaluation polysaccharides in animal feed

229030 日式園林藝術特論 2 選 蔡龍銘、下、無

本課程內容包括：日式庭園之理念〈神仙思想、佛教思想、藝術人文思想、自然思想〉。日式庭園之形制〈石景、水景、山水之庭、茶庭、禪庭、枯山水〉。日式庭園之構築〈構築材料、構築元素、構築方法〉

229030 Special Topics on Japanese Garden Art 2 S L. M. TSAI, S, Nil

The contents of this course includes: the creative inspiration (god spirit, Buddhism, humanistic, art and nature). The design principles such as the development of Japanese gardens, rock landscape, , mountain and water landscape, tea garden, Zen Buddhism garden, dry landscape .The creation of a Japanese garden such as materials, elements and methods.

229031 建築暨景觀風水特論 2 選 下

本課程的目的在研讀中國風水經典之作，以了解中國風水的理論與實際做為建築與景觀規劃設計的參考依據...。

229031 Special Topics on Architecture and Landscape Architecture Geomancy(Fengshui) 2 S 下

This course is to study the some classics of Chinese Fengshui in order to understand its theory and practice as the fundamental reference for the planning and design of architecture and landscape architecture.

熱帶農業暨國際合作系碩士在職專班

(一)教育目標

- | |
|---------------------------------------|
| 1.提供在職人員進修管道。
2.提升農、林、養殖及畜牧業之專業技術。 |
|---------------------------------------|

(二)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	
專題討論 Seminar	4	1	1	1	1	
碩士論文 Thesis Research	6			3	3	
永續農業 Sustainable Agriculture	3		3			
合 計	13	1	4	4	4	

(三)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	
熱帶農業生態 Tropical Agriculture Ecology	2	2				
試驗設計及數據分析 Experimental Design and Data Analysis	2	2				
農業研究方法與試驗設計 Agriculture Research Methods and Experimental Design	3	3				
科技研究方法 Scientific Research Methods	2		2			
天然物特論 Special Topics on Nature 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	
林產特論 Special Topics on Forest Products	2			2		
高等食品加工 Advanced Food Processing	3	3				
有機廢棄物處理工程 Agricultural Waste Management Engineering	3	3				
農企業策略管理 Strategic Management in Agribusiness	3	3				
作物學特論 Advanced Crop Science	2	2				
環境影響評估特論 Special Topics on Environmental Impact Assessment	3		3			
農企業管理特論 Special Topics on Agribusiness Management	3		3			
熱帶作物害蟲管理特論 Special Topics on Insect Pest Management on Tropical Crops	3		3			
農園水土與保持 Water and Soil Conservation on Farm	2		2			
農業發展與國際合作 Agricultural Development and International Cooperation	4		4			
農業生物技術 Agricultural Biotechnology	3		3			
細胞遺傳學 Cytogenetics	2	2				
高等作物育種學 Advanced Crop Breeding	2	2				
產業競爭力分析 Competitive Analysis in Industry	3			3		
應用微生物學 Applied Microbiology	3			3		
行銷管理特論 Special Topics on Marketing Management	2			2		
環境保育特論 Environmental Conservation	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	
綜合蔬菜生產 Integrated Vegetable Production	4			4		
果樹學特論 Advanced Pomology	2			2		
蔬菜學特論 Advanced Olericulture	2			2		
花卉學特論 Advanced Floriculture	2				2	
高等園產品處理 Advanced Horticultural Product Handling	2				2	
休閒農業 Leisure Farm Management	3				3	
觀光經營 Tourism Management	3				3	
園藝產品經營 Seminar on Managing Agribusiness of Horticultural Products	3				3	
科學期刊選讀 Selected Topics on Scientific Publications	1	1				
病蟲害管理特論 Special Topics on Integrated Pest Management	3		3			
社區營造特論 Special Topics on Community Planning	3			3		
草坪生理與管理 Turf Physiology and Management	2			2		
環控栽培與作物生產 Controlled Environment Crop Production	3			3		
高等特藥用作物學 Advanced Special and Medicinal Crop Science	2			2		
合 計	92	23	23	33	13	

*附註:本系選修課程包含全校碩專班選修課。

國立屏東科技大學 熱帶農業暨國際合作系 碩專班課程規劃表

學年	第一學年				第二學年				學分總計
	第一學期		第二學期		第一學期		第二學期		
修別	科目	學分	科目	學分	科目	學分	科目	學分	
必修	專題討論	1	專題討論 永續農業	1 3	專題討論 碩士論文	1 3	專題討論 碩士論文	1 3	
小計		1		4		4		4	13
選修	熱帶農業生態 試驗設計及數據分析 農業研究方法與試驗設計 高等食品加工 有機廢棄物處理工程 農企業策略管理 作物學特論 細胞遺傳學 高等作物育種學 科學期刊選讀	2 2 3 3 3 3 2 2 2 1	科技研究方法 環境影響評估特論 農企業管理特論 熱帶作物害蟲管理特論 農園水土與保持 農業發展與國際合作 農業生物技術 病蟲害管理特論	2 3 3 3 3 2 4 3 3	天然物特論 林產特論 產業競爭力分析 應用微生物學 行銷管理特論 環境保育特論 綜合蔬菜生產 果樹學特論 蔬菜學特論 社區營造特論 草坪生理與管理 環控栽培與作物生產 高等特藥用作物學	2 2 3 3 2 3 2 2 3 2 3 2	花卉學特論 高等園產品處理 休閒農業 觀光經營 園藝產品經營	2 2 3 3 3	
小計		23		23		33		13	92

註：本系碩士在職專班學生至少應修滿 30 學分始得畢業(其中必修應修 10 學分，選修應修 20 學分)

熱帶農業暨國際合作系 Department of Tropical Agriculture and International Cooperation

課程代號 Course Number	科目名稱(中文) Course (Chinese)	學分 Credite	科目名稱(英文) Course (English)	頁次 Page
專業必修科目 Required Courses				
226001	專題討論	4	Seminar	
226002	碩士論文	6	Thesis Research	
專業選修科目 Elective Courses -----				
226003	熱帶農業生態	2	Tropical Agriculture Ecology	
226004	高等食品加工	3	Advanced Food Processing	
226005	有機廢棄物處理工程	3	Agricultural Waste Management Engineering	
226006	農企業策略管理	3	Strategic Management in Agribusiness	
226007	作物學特論	2	Advanced Crop Science	
226008	環境影響評估特論	3	Special Topics on Environmental Impact Assessment	
226009	農企業管理特論	3	Special Topics on Agribusiness Management	
226010	永續農業	3	Sustainable Agriculture	
226011	熱帶作物害蟲管理特論	3	Special Topics on Insect Pest Management on Tropical Crops	
226012	農園水土與保持	2	Water and Soil Conservation on Farm	
226013	農業發展與國際合作	4	Agricultural Development and International Cooperation	
226014	農業生物技術	3	Agricultural Biotechnology	
226015	細胞遺傳學	2	Cytogenetics	
226016	高等作物育種學	2	Advanced Crop Breeding	
226017	產業競爭力分析	3	Competitive Analysis in Industry	
226018	應用微生物學	3	Applied Microbiology	
226019	行銷管理特論	2	Special Topics on Marketing Management	
226020	環境保育特論	3	Environmental Conservation	
226021	綜合蔬菜生產	4	Integrated Vegetable Production	
226022	高等果樹學	2	Advanced Pomology	
226023	高等蔬菜學	2	Advanced Olericulture	
226024	高等花卉學	2	Advanced Floriculture	
226025	高等園產品處理	2	Advanced Horticultural Product Handling	
226026	休閒農業	3	Leisure Farm Management	
226027	觀光經營	3	Tourism Management	
226028	園藝產品經營	3	Seminar on Managing Agribusiness of Horticultural Products	
226029	科學期刊選讀	1	Selected Topics on Scientific Publications	
226030	試驗設計及數據分析	2	Experimental Design and Data Analysis	
226031	綜合害蟲管理特論	3	Special Topics on Integrated Pest Management	
226032	社區營造特論	3	Special Topics on Community Planning	

熱帶農業暨國際合作系

Department of Tropical Agriculture and International Cooperation

一、必修科目 Required Courses

226001 專題討論 4 必 陳光堯、方中宜、顏才博、李嘉偉
邱亞伯

本課程旨在訓練研究生對資料蒐集、整理及表達的能力。學生選擇與論文有關的題目，蒐集文獻、閱讀、整理成摘要，然後提出報告討論，並由參與教師評分。

226001 Seminar 4 R G. S. Cheng、J. Y. Fang
T. B. Yen、J. W. Lee
A. L. Charles

This course is to train graduate students the ability in searching literature, organizing materials and giving presentations. Students are required to select a topic that related to their thesis, search and review literature, and drew up an abstract and a final report as well. Presentations are scheduled twice a semester for every student.

226002 碩士論文 6 必 指導教授

利用完整執行之試驗、觀察或實務操作，使學生能徹底了解並應用修課之知識、練習口頭報告、與科學論文之寫作。老師則藉由討論，提供改進之意見。

226002 Thesis 6 R Adviser

After a well-designed project being properly conducted by students, he/she will be asked to give a oral presentation and submit the thesis before a deadline. Knowledge acquired during the study should be made use of sufficiently in the preparation of the thesis. Frequent and intensive discussions among teachers and students will be arranged to improve the quality of his/her research.

三、選修科目 Elective Courses

226003 熱帶農業生態 2 必 顏才博、李嘉偉 上

本課程深入探討台灣農業發展過程及其展望。本課程內容包括農業於生態及歷史學上之關係，及熱帶水稻、豆類、玉米、甘蔗、蔬菜、花卉及水果之生產及生長環境。此外亦將探討農業生態系之動態及熱帶農業之展望。

226003 Tropical Agriculture Ecology 2 R Tsair B. Yen、Joey Lee F

This course is to introduce the fundamental concept, ecological theories and practices of biological control of plants pathogens, insect pest and weeds. The contents of this course include such subject as biological control's history; ecological bases; foreign exploration for beneficial organisms; methods of colonization, recovery and evaluation; and integration with chemical control and microbial control. Also included is critical study of major biological control projects; their success, trend, and failure.

226004 高等食品加工 3 選 黃卓治 上

本程主要以膜處理技術、冷凍利用技術、無菌包裝技術、真空加工技術、高壓蒸汽及過

熱蒸汽利用技術、高壓利用技術、電磁波利用技術、超臨界氣體萃取技術、氧去除技術、水溫利用技術、生化反應器利用技術、生產技術為單元，介紹其加工利用技術。

226004 Advanced Food Processing 3 S T. C. Huang F

The course offers the technologies of membrane processing, frozen, aseptic packaging, vacuum, high pressure and over heat steam treatment, high pressure, micro wave, supercritical extraction, oxygen scavenger, biochemical reactor and plant productions. The processing and application of these technologies will be introduced.

226005 有機廢棄物處理工程 3 選 未定 上

由於國民所得提高，人民已對於位居環境污染問題相當重視，故農產廢棄物之處理是為農業存續之重要因子之一，然農業廢物處理是為一種有機資源再回收處理，將處理後之產物回歸土壤，使農業能永續經營，故本課程內容，包含廢棄物之理化性、前處理工程、廢水處理工程、固形物處理工程四部份

226005 Agricultural Waste Management 3 S uncertain F
Engineering

Because of the increase of income, people in this country are getting interested in the environmental pollution problems. Therefore, the treatment of wastes produced during the treatments of agricultural products become one of the important factors that agriculture can be sustained in this country. The treatment of agricultural waste is a kind of recycling organic resources. It return the recycled products back to the soil such that the soil can nurture plants continually. The subjects of this course therefore include four parts, physical and chemical characteristics of wastes, pretreatment engineering, wastewater treatment engineering, and solid waste treatment engineering.

226006 農企業策略管理 3 選 黃文琪、鍾惠雯 上

本課程之目的，在於提升學生對農企業之策略性管理能力，主要內容包括：1.導論：(1)策略性管理程序，(2)農企業的使命、目標、與利害關係人；2.策略之形成：(1)外部環境分析：機會與威脅之辨識，(2)內部分析：強弱勢與獨特能力，(3)功夫策略，(4)事業策略，(5)公司策略；3.策略之執行：(1)組織結構設計，(2)策略性控制與整合之選擇，(3)結構、控制、與策略之配合，(4)策略變革與衝突、政治

226006 Strategic Management in 3 S R. H. Chung、W. C. Huang F
Agribusiness

The purpose of this course is to enhance the students' ability of strategic management for agribusiness. Course contents include: 1.Introduction: (1)The Strategic Management Process, (2)Corporate Mission, Goals, and Stakeholders. 2.Strategy Formulation: (1)Analyzing the External Environment: The Identification of Opportunities and Treats, (2)Internal analysis: Strengths, Weaknesses, and Distinctive Competencies. (3)Function-Level Strategy, (4)Business-Level Strategy, (5)Corporate-Level Strategy; 3.Strategic Implementation: (1)Designing Organizational Structure, (2)Choosing Integration and Control Systems, (3)Matching Structure and Control to Strategy, (4)Conflict Policies and Change in Strategy-Structure Choice.

226007 作物學特論 2 選 陳光堯、方中宜 上

本課程旨在介紹永續農業在水稻田及其生態體系壓力下之關係，內容包括永續農業在資源利用、資源管理、資源與生態體系、水稻田生物物理性、營養及水份需求之維持等。

226007 Advanced Crop Science 2 S G. S. Cheng J. Y. Fang
F

This course is to introduce the concepts of sustainable agriculture in relation to rice farming and stressed ecosystems. The topics included in this course are: sustainability and resource utilization, resource management, resource and stressed eco-systems, biophysical basis of sustainability of rice farming, maintenance of the nutrient requirements and water supplies of rice.

226008 環境影響評估特論 3 選 未定 下

本課程之目的在於教導研究生如何評估開發行為對環境產生之各種衝擊，及如何管理評估計畫。主要內容包括：(1)計畫之管理方法；(2)環境影響評估制度與觀念之源起；(3)程序與法規介紹；(4)方法論應用；(5)大氣環境、地表水及地下水、噪音振動、社經、土壤、景觀美質及生態等之預測與評估模式；及(6)公共參與決策。

226008 Special Topics on Environmental 3 S uncertain S
Impact Assessment

The purposes of this course are to introduce graduate student how to assess environmental impact and how to manage an assessment project. It contains the following subjects: methods of project management; concept and source of EIA; process and Acts; methodology; prediction and assessment of impacts on the air environment, surface and ground water environment, noise and vibration, cultural environment, socioeconomic environment, soil environment, visual impact and biological environment; public participation in environmental decision making.

226009 農企業管理特論 3 選 鍾惠雯 上

本課程之目的在於傳授學生基本財務觀念及管理技能。其主要內容包括：財務會計，經理的角色，瞭解農企業管理，行銷在農企業管理，及農企業的成功。

226009 Special Topics on Agribusiness 3 S R. H. Chung F
Management

This course is designed to teach students basic financial concept and management skills. The main subjects include: 1) Financial Accounting, 2) the Role of a Manager, 3) Understanding Agribusiness Management, 4) Marketing in Agribusiness Management, and 5) Success of Agribusiness.

226010 永續農業 3 選 方中宜、陳光堯、邱亞伯 下

本課程將探討臺灣植物病蟲害之發展史及其防治對策，本課程將著重於現行動植物檢疫法規及制度、農藥及其藥害、農業環境與植物生產之關係。低投入永續農業、替代農業、與永續農業之關係亦將討論。此外本課程亦探討永續農業世界上執行之現況。

226010 Sustainable Agriculture 3 S G. S. Cheng、J. Y. Fang
A. L. Charles S

This course is to review the history of the occurrence of plant disease insect pests in Taiwan, their control measures. Emphasis will be placed on the current plant quarantine and inspection systems, pesticides and the problems associated with their uses, agricultural environment and plant production. The linkage of plant protection and sustainable agriculture will be discussed. Also discussed will be organic agriculture, low-input sustainable agriculture, alternative agriculture and their relationship with sustainable agriculture. Finally, a critical review of worldwide projects on sustainable agriculture will be made.

226011 熱帶作物害蟲管理特論 3 選 下

本課程主要是介紹重要熱帶作物及蟲害，並針對重要害蟲防治方法如化學防治、生物防治、耕作防治、法規防治及綜合防治，防治原理及技術對環境的影響。

226011 Special Topics on Insect Pest Management on Tropical Crops 3 S S

This course is to introduce to students some important pests of tropical crops. Also introduced will include such pest control methods as chemical control, biological control, cultural control, legal control and integrated pest management as well as their background information and impacts on the environment.

226012 農園水土與保持 2 選 未定 下

本課程介紹熱帶地區常見的土壤流失原因及發生的過程，並針對土壤流失的原因介紹相應對策；包括工程方法如山邊溝、平台及與農業方法如覆蓋、敷蓋等實用策略以控制農地土壤、水份超量流失，進而達到農地永續使用的目的。

226012 Water and Soil Conservation on Farm 2 S uncertain S

This course is to introduce the principles of soil erosion and the procedures to prevent soil and water losses. The leveling, grading and drainage system designs of farm land are also covered. How to minimize the losses of soil and water is the key to the success on farming. This course will help students to know why and how the soil and water disappear after a heavy rain in tropical areas. The over all objective of this course if to help students determine can be done to prevent the productive soils being deteriorated.

226013 農業發展與國際合作 4 選 、謝順景 下

本課程內容在介紹中華民國在臺灣五十年來之農業發展過程，從初期的土地改革政策和以農業為主之經濟發展，進入以工商業為主之現代化社會，同時在配合農業升級及回饋國際社會政策下推展各項國際合作計劃；目的在使同學能鑑往知來，為下一世紀之農業開創新局。

226013 Agricultural Development and International Cooperation 4 S S. C. Hsieh S

This course will provide an insight of the past 50 years' agricultural development of Taiwan, and also point out its new direction for the next century. It will cover the topics of "Land Reform Program", "Agricultural Trade and Economic Development", "Transformation from an Agricultural to Industrialized Economy", and "International Cooperation", etc.

226014 農業生物技術 3 選 未定 上

本課程旨在討論分子生物及生物技術於農學上的展望。

226014 Agricultural Biotechnology 3 S uncertain F

The course discusses the development and perspectives of various aspects of molecular biology and biotechnology in agriculture.

226015 細胞遺傳學 2 選 未定 上

本課程提供大學部高年級及研究生研習。課程內容包括細胞遺傳史、染色體之細微構造及染色技術、染色體之變異與演化、細胞遺傳與植物育種之關聯性等。

226015 Cytogenetics 2 S uncertain F

This course is to include the following contents: 1.the history of cytogenetics, 2.the fine structure of chromosomes and staining technique, 3.the diversity and evolution of chromosome, 4.the relationship between plant breeding and cytogenesis on tropical vegetable production.

226016 高等作物育種學 2 選 未定 上
 本課程以講授及討論不同主題之作物育種理論及育種技術，內容包括以下章節：.育種之演變、族群與變異、.變異誘導與處理、體細胞雜交、基因轉移、選拔策略、抗生物性及非生物性之遺傳及育種、特殊性狀之育種、其他。

226016 Advanced Crop Breeding 2 S uncertain F
 This course includes the following contents: the evolution of plant breeding, population structure and variability, induced variation and its manipulation, somatic hybridization, gene transfer to plants, selection strategies, breeding and genetics on abiotic and biotic stress, specific trait breeding, others.

226017 產業競爭力分析 3 選 未定 上
 本課程旨在使學生瞭解產業得分析方法，以產業環境分析、組織經濟分析、市場結構分析等評估產業之發展性。內容包括：1.緒論；2. 產業環境分析；3.產業組織經濟分析；4.產業結構分析；5. 市場結構分析；6.產業價值鍊分析；7.策略性產業發展分析；8.產業國際競爭力分析。

226017 Competitive Analysis in Industry 3 S uncertain F
 The objective of this course is to realize the analysis methods to evaluate the industry development by environment analysis, organization economic analysis, and market structure analysis. Course contents include: 1.introduction; 2.industrial environment analysis; 3.industry organization economics; 4.industrial structure analysis; 5.market structure analysis; 6.value-added chain of industry; 7.strategic development of industry; 8.international competitive analysis of industry.

226018 應用微生物學 3 選 李嘉偉 上
 本課程在講授有益作物生長之有益微生物，如固氮菌，菌根菌，溶磷菌及枯草桿菌等，介紹其作用機制及應用方法。

226018 Applied Microbiology 3 S J. W. Lee F
 The course is designed to acquaint of beneficial Microorganism, such as, nitrogen fixation Microorganism, arbuscular endomycorrhizal fungi, phosphate-solubilizing Microorganism and Bacillus. Research and application techniques are also introduced.

226019 行銷管理特論 2 選 未定 上
 本課程之目的在於傳授學生行銷理念及知識。其主要內容包括：瞭解行銷管理，分析行銷機會，發展行銷策略，策畫行銷節目，及管理行銷人力資源。

226019 Special Topics on Marketing Management 2 S uncertain F
 This course is designed to teach students the concept and knowledge of marketing. The subjects include: 1) Understanding Marketing Management, 2) Analyzing Marketing Opportunities, 3) Developing Marketing Strategies, 4) Planning Marketing Programs, and 5) Managing the Marketing Effort.

226020 環境保育特論 3 選 未定 上
 本課程目的在使學生進入專業領域前能全面瞭解各種環境保育議題的科學面，以建立健全環境保育觀念。課程內容包括：地球科學原理、氣象學原理、自然資源管理與保育、環境污染與預防、生態學概念與應用、社會與人文環境管理、環境政策與規劃、及永續發展。

226020 Environmental Conservation 3 S uncertain F

The purpose of this course is to introduce the scientific parts of environmental conservation to students before they study their special topics. This learning may establish them a healthy environmental worldview. The course includes: principle of earth science, meteorology, management and reservation of natural resources, pollution prevention, concept and application of ecology, social environmental management, environmental policy and planning, and sustainable environmental development.

226021 綜合蔬菜生產 4 選 未定 上

本課程在探討熱帶地區蔬菜作物之特性及生產模式，將利用田間資料、互動電腦程式、幻燈片、電視等各種教材及設備，介紹蔬菜作物之基本生物及生態學、系統性之商業生產、以及各種熱帶地區之蔬菜生產模式。

226021 Integrated Vegetable Production 4 uncertain F

This course Characterizes and discusses the major vegetable crops and their production systems in the tropics. Field data, interactive computer programs, slides and video are used to introduce biology and ecology of vegetable crops, commercial vegetable production systems, lowland rice-based vegetable production systems, and homestead vegetable production systems in the tropics. Students in this course will. Appreciate the importance of vegetable diversity for tropical agriculture and food-based approaches to enhancing human nutrition in developing countries. Become familiar with the major vegetable crops, production systems, marketing infrastructure, utilization and processing, and seed industry in the tropics.

Conduct problem-based learning for the major biotic and a biotic factors affecting 1 vegetable productivity and cropping system sustainability. Learn to integrate recommended systems for socio-economic decision-making, crop management, soil management, water management, protection management, harvesting, and post-harvest handling for profitable vegetable production. Learn to how to conduct research to solve specific problems related to production and variety improvements of tropical vegetables. Develop synthesis papers on various topics related to tropical vegetable production. Learn to use Internet to obtain and synthesize inform

226022 高等果樹學 2 選 未定 上

講述果樹學之最新發展及趨勢、包括果樹立體結構與產量及品質之關係、穗砧之交互影響、果樹之環境因素與控制、臺灣果樹之現況等引申說明。

226022 Advanced Pomology 2 S uncertain F

This course is to offer knowledge on the current development and trends of fruit production, tree architecture and its effects on yield and fruit quality, rootstock-scion relationships, environmental control, orchard system, and current status of fruit production in Taiwan.

226023 高等蔬菜學 2 選 未定 上

本課程提供大學部高年級及研究生研習。課程內容討論有關蔬菜的栽培生理及遺傳育種特性、過去本省重要蔬菜發展之源由、現今蔬菜生產之特色及展望。

226023 Advanced Olericulture 2 S uncertain F

The topics of this course include the physiology and genetic breeding in vegetable crops, the origin and characteristics of today's vegetable industry in Taiwan, special features and uniqueness of vegetable crops' production in Taiwan.

226024 高等花卉學 2 選 未定 下

本課程之目的乃是深入探討花卉園藝技術，主要課程內容為：1、花卉種源保存與開發 2、花卉種苗生產技術 3、花卉栽培介質與養、水分管理 4、花卉開花生理與調節 5、花卉商品

設計與流通 6、花卉栽培技術各論。

226024 Advanced Floriculture 2 S uncertain S

This course is designed for advanced study on floriculture of certain topics. They are: 1. Flower variety reservation and development. 2. Techniques of floral seeds and seedlings propagation. 3. Management of substrates, fertilization and water in floriculture. 4. Flowering physiology and regulation. 5. Product design and sales. 6. Flower forcing of special crops.

226025 高等園產品處理 2 選 未定 下

本課程是在農園產品處理技術之基本基礎上，進一步從生理、生化上，介紹園產品採收後之變化機制，以及控制產品劣變、老化之方法與最新技術。從理論與實用上，配合國內產業與市場現況，加以討論，期能學理與應用兼顧，引導學生發揮吸收、思考及創新之能力。課程內容涵蓋園產品採收後之生理、生化變化，選別、分級包裝、溫度管理、濕度管理、病害控制、貯運技術、特殊處理...等等。

226025 Advanced Horticultural Product Handling 2 S uncertain S

This course provides a thorough overview of how plants and live plant products respond after harvest. It focuses on the basic principles governing postharvest physiology, cellular and subcellular structures of harvested products, metabolic alterations and changes in biochemical constituents after harvest. This course also discusses the basic environmental factors that cause stresses after harvest; including the principles of gas, solvent, and solute movement within harvested products, exchanges with the external environment; the principles of heat, heat transfer and cooling. In addition, this course also includes the current postharvest technologies used world wide.

226026 休閒農業 3 選 段兆麟 下

1. 休閒農業之成立 2. 休閒農業種類及特徵 3. 休閒農業選擇及決定方法 4. 休閒農業內設施及配置 5. 開業準備 6. 休閒農業營運 7. 圃場及生產管理注意事項

226026 Leisure Farm Management 3 S C. L. Tuan S

This course is to offer students the knowledge on leisure farm management the topics included in this course are: 1. Establishment of the leisure farm management. 2. Kinds and characteristics of the leisure farm management. 3. Methods of selection and decision on leisure farm management. 4. Facilities and equipment for the leisure farm management. 5. Preparation for the opening of business on leisure farm management. 6. Operation on leisure farm management. 7. Essential points on farm and production administration.

226027 觀光經營 3 選 未定 下

有關觀光的知識是跨越不同領域，來自不同領域的學者與研究人員曾探討與講授觀光有關的主題，然而，至今仍然難有對觀光應涵蓋什麼有一致的看法。

本課程直覺地提出與區域性觀光發展有關的主題知識，供未來負責觀光發展或對觀光有興趣的學生學習。此課程內容包括觀光資源調查、評估觀光資源、分析觀光發展之衝擊、觀光規劃、目的地經營，觀光行銷與行銷研究。

226027 Tourism Management 3 S uncertain S

Tourism has been studied and taught by an increasing number of researchers and academic workers from a variety of disciplines, respectively. However, no widely adepated interdisciplines field of tourism studies has been defined. This course intuitively provides a number of topics which

might be associated with tourism development for a regional level. For those students who will be in charge of tourism development or are interested in tourism, may need to know following subjects : tourism resource inventory, evaluating tourism resources, analysing the impact of tourism development, planning for tourism, destination management, marketing, and tourism marketing research.

226028 園藝產品經營 3 選 未定 下

本課程之重點在探討於國際貿易自由化之趨勢下：1.園藝產品業應如何因應市場需求、穩定產銷，以促進產業永續發展。2.探討運用企業經營理念於園藝產品業之研究：(1) 相關政策法規，(2)規劃與決策，(3)成本收益與獲益力分析，(4)行銷規劃與管理，(5)組織與領導，(6)管制與評估。

226028 Seminar on Managing Agribusiness of Horticultural Products 3 S uncertain S

This course is designed to discuss the following issues of horticultural products under the international trade liberalization circumstance: 1.How to stabilize the production and marketing of horticultural products by adapting to the market supply and demand situation that will promote the sustainable development of domestic horticultural products. 2.Investigate the following research subjects applying business management concepts: (1) The related agricultural policy and regulations. (2) Planning and decision. (3) Cost, benefit, and profit analysis. (4) Capital and finance. (5) Marketing planning and management. (6) Organization and leadership. (7) Control and evaluation.

226029 科學期刊選讀 1 選 陳光堯、方中宜、邱亞伯 上

本課程主要介紹科學出版物，包括摘要、前言、材料與方法、討論和參考文獻。基於此，將教導學生如何閱讀和撰寫科學文章。

228029 Selected Topics on Scientific Publications 1 S G. S. Cheng、J. Y. Fang A. L. Charles F

This course is to introduce the formats of scientific publications, including abstract, introduction, materials and methods, results, discussion, and references. Based on these, students will be taught as to how to read and write scientific papers.

226030 試驗設計及數據分析 2 選 謝清祥 上

本課程之目的在於訓練研究生如何利用統計及試驗設計之方法以從事基本之試驗研究，其主要內容包括：各種生物數據之性質及整理，數據均質性分析，迴歸與相關性分析，共變方分析、試驗設計方法及線型分析及上述試驗分析之電腦應用。

226030 Experimental Design and Data Analysis 2 S C. H. Hsieh F

This course is to train students how to use statistical and experimental methods on conducting basic research experiments. The subjects include: 1.Characteristics of biological data and its collection, 2.Homogeneous tests, 3.Regression and correlation analysis, 4.Covariance analysis, 5.Experimental designs and linear analysis, 6.Computer applications of above analyses.

226031 綜合害蟲管理特論 3 選 下

討論農業生態系統中重要作物之病原、害蟲與其他有害生物綜合管理的策略與方法。

226031 Special Topics on Integrated Pest Management 3 S S

The strategies and tactics of integrated management of pests in agricultural ecology of

important crops are discussed.

226032 社區營造特論

3 選

未定 上

主要課題為區域規劃、發展方式、居住環境品質、公共設施及管理系統之進階探討，課程中將討論世界各城市區域發展機制並建立規劃架構，課程包括區域規劃意義及內容、規劃思想、規劃方法和法律位階。

226032 Special Topics on Community

3 S

uncertain F

Planning

Emphasis is on advanced regional planning, development, environmental quality, public services, and management systems. This course will discuss the development mechanism of world cities and establish the planning framework. Topics: the meaning and content of regional planning, planning idea, planning method, and legal position.

食品科學系 新增課程中英文摘要

361026 實務專題 1 選 下

本課程主旨乃訓練學生將理論與實務相結合，經由親自動手製作，完成作品。達到技職教育特色。

361026 Practical Projects 1 S S

The main purpose of this course is to let students combine the theorem and practical practice together. The students work by themselves and come out a real object finally. To achieve the goal of technique education.

森林系 新增課程中英文摘要

生態旅遊研究 3 學分 選修 羅凱安

台灣的位置與地形特殊，有許多寶貴的生態與人文資源，如何保育與合理利用是相當重要的研究課題。生態旅遊是一種當前環境保育、發展觀光與社區發展三個重要方向發展下的產物，其不僅為國內外的發展趨勢，也是各種生態文化產業提供新的發展契機。本課程主要涵蓋五部份，即生態與旅遊之導論、生態旅遊之資源與調查、遊憩觀光之衝擊與評估、生態旅遊規劃與管理、以及生態旅遊案例與省思，培養學生具有研究與操作生態旅遊之能力。

Ecotourism Research 3 S K. A. Lo

Taiwan has important location and unique landscape. There are many treasure embedded in ecological and cultural resources. How to preserve and conserve those resources are quite important research topics. Ecotourism is a new concept to deal with environmental conservation, tourism, and community development. It is not only domestic and foreign trend; also provide turning points for various ecological and cultural industries development. Of this curriculum mainly covers five parts, namely introduction, the ecotourism resources and the investigation, recreational impact and the monitoring, the eco-tourism planning and management, as well as the case studies and reconsiderations. It can enhance the students' research and operation ability on ecotourism.

生物科技研究所 新增課程中英文摘要

分子病毒學 3 選 施玟玲、上

內容介紹重要觀念之介紹與掌握，非常適合初學者與已修過一般病毒學、但重要觀念掌握不清楚之學生。瞭解如何來研究病毒，包括主要之研究方法與技術，能夠使修課之學生，對於如何開始研究病毒有一完整之概念。使修課之學生能夠掌握病毒之一般共同特性與瞭解病毒基因表現之多樣性並強調重要病毒(如禽流感病毒)之如何致病與其為何難以預防之理由。

Molecular Virology 3 S W. L. Shih, F

The contents of this course including (1) The structure and classification of virus (2) The replication and gene expression of viral genetic materials (3)How interaction and disease progression in virus-infected cells (4) The traditional and new methods in preventing and treating virus infection (5) The analysis and research techniques of virology

細胞凋亡

3 選

施政玲、下

介紹細胞凋亡機制與生物體的關係並加強學生與最新發表論文的認識與剖析，講解疾病的發生與細胞凋亡訊息傳遞路徑的相關性，以及當今利用調控凋亡訊息傳遞路徑於疾病治療之策略。並講解各種細胞凋亡的分析方法與原理，包括流式細胞分析的原理及應用。利用對於細胞凋亡機制的探討，幫助學生融合現階段已知的分子生物學或細胞生物學技術及觀念，並培養其在生命科學基礎方面的思考能力。

Apoptosis

3 S

W. L. Shih, S

The course will introduce the molecular mechanisms of apoptosis, the apoptosis related disease and how to cure this disease base upon the control of apoptosis, the principle and rationale of apoptosis analysis techniques

機械系 新增課程中英文摘要

322022 機械工作法實習

1 選

機械製造涵蓋切削加工鑄造焊接等技術,本實習以機械切削加工為主,諸如車磨鑽銑從製程設計刀具製作夾具準備到實際切削加工作實務操作練習並熟悉使用切削加工機械有利於明瞭各種切削加工特性及機件製程安排.

322022 Manufacturing Processes Lab. 1 S

Manufacturing Processes include machining casting and joining. The laboratory will concentrate on performing mechanical machining processes, such as turning, milling, drilling, facing shaping and planning. Process, tool and fixture designs relative to practical machining processes will also be emphasized. Student are required to operate machines so as to get familiar with each machining technique.

機械視覺應用技術

2 選

本課程內容包含：視覺系統介紹、視覺系統檢測、影像處理技術、實例剖析、打光技術以及影像程式設計等相關主題內容，此課程的教學內容主要訓練學生具有學理與實際設計之能力。

Application of machine vision technology

2 S

The content of this course include the introduction of machine vision, the sensor of machine vision, image processing technique, applied example, lighting technique and image software design. This course is aimed to teach students with the ability of theoretical study and practical design.

機械視覺應用技術實習

1 選

本課程內容包含：視覺系統介紹、視覺系統檢測、影像處理技術、實例剖析、打光技術以及影像程式設計等相關主題內容，此課程的教學內容主要訓練學生具有學理與實際設計之能力。

Application of machine vision technology training

2 S

The content of this course include the introduction of machine vision, the sensor of machine vision, image processing technique, applied example, lighting technique and image software design. This course is aimed to teach students with the ability of theoretical study and practical design.

材料工程系 新增課程中英文摘要

大學部和碩士班

新興科技導論

3 選

曹龍泉

本課程教學在於培養學生之新興科技產業發展架構的理論基礎及說明五種新興科技發展；其授課內容包括新興科技產業、國家近期重點科技發展、新興科技與經濟關係、產業分析工具、新興科技產業分析（一~五）--智慧化居住、前瞻材料、綠色能源、半導體、生物科技、智慧型機器人及個案研討。

Emerging Technology

3 S

Lung-Chuan Tsao

This course will develop the student's capabilities to analyze particular emerging technologies for technology monitoring, forecasting, and assessment, and exploration of five emerging technologies. The content includes fundamentals of the emerging technology、national mid-term and long-term science and technology development plan、economy relationship and emerging technology relationship、 industrial analysis tools、 emerging technology industry analysis (1~5) — intelligent home、 smart materials、 green energy、 semiconductor、 biotechnology、 intelligent robotics and case Studies.

微感測器

3 選

李佳言

本微感測器為教導學生對微感測器設計與製程的基本原理認識，以及深入瞭解感測器材料與相關製程設備、感測器製作與感測器產業之運作，運用業界所普遍使用的感測器材料與設備介紹，使學生瞭解材料工程師在感測器研發與製作可扮演的角色與任務。授課內容包括微機電系統簡介、微感測器簡介、環境感測器、車輛感測器

Micro-sensors

3 S

Chia-Yen Lee

The aim of “Micro-sensors” is to acquaint the students with the basic principles of micro-sensor design and manufacturing. The course also introduces the students to the sensor materials and manufacturing equipments, the sensor fabrication and the sensor business. Utilizing the knowledgement of commercial sensor materials and equipments, the students can understand their roles in the sensor fields. The contents include Introduction to MEMS, Introduction to Micro-sensors, Environmental Sensors and Vehicle Sensors.

就業核心職能講座

3 S

洪廷甫

本課程規劃在讓學生對於個人優勢之認知、認同組織體制與自我定位進而認識大環境及職務脈動趨向，以有效訓練成為知識經濟社會中一個有準備的人力資本、包含動機職能、行為職能、知識職能。

Occupational core competencies

3 S

Ting-Fu Hong

The aim of this course unit is to acquaint the student with the competencies of self advantages and group identification. By further understanding occupational environment and its variations, a well prepared human resource is expected for the knowledge economic society. The content includes Driving competencies、Behavioral competencies、Knowledge competencies.

微機電導論**3 選****傅龍明**

微機電技術是一個革命性的關鍵技術。此技術主要的優勢包含產品微小化，攜帶輕便，可靠度高及成本低等等。微機電內容包含九大部分如下所示：.何為微機電技術，尺度效應，VLSI 製程技術，體型微細加工，表面加工技術，電鍍及 LIGA 技術，微型整合結構，微機電產品簡介，微機電技術的應用。

Special Topic on MEMS**3 S****Fu Lung-Ming**

MEMS (Micro-Electro-Mechanical-System) is a revolutionary enabling technology. Those potential benefits including miniature, portability, improved reliability, low cost et. al. This course has ten part in topics of MEMS as follows: What is MEMS, Introduction to Microscopic world, Scaling rules- What happens in small world? Review of standard VLSI microfabrication process, Bulk micromachining, Surface Micromachining, Electroplating and LIGA, Integration of microstructures and electronics, Examples of MEMS products and Applications of MEMS transducers.

表面處理科技特論**3 S****洪廷甫**

本課程規劃在讓學生認識表面處理科技的發展和應用，著重在於熱處理、鋼鐵表面處理、防蝕與陽極處理及其他特殊機能表面處理技術理論與實務上的重要性。包含熱處理、鋼鐵表面處理、防蝕處理、陽極處理、功能性表面處理。

Advanced Surface Treatment Technology**3 S****Ting-Fu Hong**

The aim of this course unit is to acquaint the student with the concept and applications of advanced surface treatment technology. The course will focus on teaching the theoretical and practical knowledge of heat treatments, steel surface treatment technologies, corrosion resistance treatments, anodic treatments and other special functional surface treatment technologies. The content includes Heat treatments、Steel Surface treatments、Corrosion resistance treatments、Anodic treatments、Functional surface treatments.

生醫工程特論**3 選****洪廷甫**

本課程規劃在讓學生認識生物醫學工程的發展概念和應用，著重在於生物科技應用、醫療器材與植入物開發及醫療光電設備與系統之整合實務上的重要性。包含醫療科技與倫理、人體解剖學、生物力學、生物技術與組織工程、醫療材料與設備開發。

Advanced Biomedical Engineering**3S****Ting-Fu Hong**

The aim of this course unit is to acquaint the student with the concept and applications of biomedical engineering. The course will focus on teaching the practical medical and industrial applications on bio-technology, implant devices, and medical photonic equipments and systems. The content includes Describe the medical technologies and their ethical issues、Understand the concept of anatomy and physiology、Understand the concept of biomechanics、Understand the advanced concept of bio-technologies and tissue engineering、Understand the importance and strategy of developing advanced biomedical materials, devices, equipments and systems.

工廠管理**3 選****李英杰**

本課程規劃在讓學生了解工廠的作業流程、產品管理、組織管理、資材管理等。工廠管理即是其中一項重要的基礎管理工作。工廠乃是產品的製造場所，所謂工廠管理即將勞動力、土地、資本、原材料等各種有效資源導入製造場所，憑藉計劃、組織、人事、指導、控制等活動，使工廠能夠有計劃、按步驟地如期達成生產目標。使學生能充份了解產業實際管理面與應用面。授課內容包括工廠組織、工廠佈置、物料搬運、產品研發、資材管理與品質管理。

Factory Management

3S

Ying-Chieh, Lee

The aim of this course unit is to acquaint the students with the know-how of factory management. The course also introduces to the students the organization management, factory layout, finished-good moving, products development and quality management. With the background, a course section on quality management topic is presented. It is hoped that it will be very useful to students who have to learn about the essential area of this management know-how. The content includes fundamentals of factory management, organization management, quality management and product management.

產業分析

3 選

曹龍泉

本課程教學在於培養學生之產業發展架構的理論基礎、SWOT 分析工具以及說明五種科技產業發展；經由個案教學來構建產業創新趨勢與策略分析的能力，並以本課程所學之分析工具為基礎，有系統的、有步驟的協助產業的創新趨勢。其授課內容包括產業型態、材料與產業關係、產業分析工具、個案分析（一~四）。

Industry Analysis

3S

Lung-Chuan Tsao

This course will develop the student's capabilities to analyze industry technologies for technology monitoring, forecasting, and assessment, with introduction of information **SWOT** analysis tools and exploration of five industry technologies. The course focuses on developing the capability to generate an innovation forecast, as a term project -- i.e., it presents the particular steps and technologies useful in generating innovation forecast. The content includes fundamentals of the industry technology type、**technology** development **plan**、material relationship and industry technology relationship、industrial **analysis** tools、industry analysis (1-4).

微系統製程技術

3 選

傅龍明

本課程之目的：在介紹微系統製程技術中之主要流程及使用之機械設備，以供相關科系有興趣之同學修習，以便對國家重要產業有所瞭解。內容包括：了解微機電系統之製程，討論微型感知器及致動器的製程及工作原理，真空技術，參雜方法，光刻術，薄膜技術，製程規劃，實例探討。

Microsystem Technology for MEMS

3S

Fu Lung-Ming

The purpose of this course is to introduce the basic knowledge of MEMS is fabricated to the students. The student who wants to attend in this course should have basic knowledge about physics and chemistry. The content of the course will include following topics: Mems process, Microsensor & acuator, Vacuum technology, Dopping, Light etching, Membrane technology and Process design.

材料接合技術

3 選

曾光宏

本課程將介紹材料接合之基本原理，並於課程中介紹目前產業最先進之接合技術與工程實務，以及接合品質管理，使學生能深入了解產業應用此製程技術之核心。授課內容包括接合製程原理、銲接冶金、接頭設計、電弧銲接技術、電阻銲接技術、固態銲接技術、軟銲與硬銲技術、先進接合技術、銲接機器人、銲接檢驗與品質控制。

Materials Joining Technology

3 S Kuang-Hung Tsen

The aim of this course unit is to acquaint the students with the basic principles of materials joining. The course also introduces to the students the advanced technology and engineering practices of joining industry field. With the background, a course section on quality management topic is presented. It is hoped that it will be very useful to students who have to learn about the essential area of this processing technology. The content includes fundamentals of the joining processes, welding metallurgy, joint design, arc welding technology, resistance welding technology, solid-state welding technology, soldering and brazing technology, advanced joining technology, welding robots, welding inspection and quality control.

熱處理工程特論

3 選

曾光宏

本課程將介紹材料熱處理之高等理論，並於課程中介紹目前產業最先進之熱處理技術與工程實務，以及品質工程，使學生能深入了解產業應用此製程技術之核心。授課內容包括熱處理原理、硬化能、熱處理爐及其相關設備、熱處理製程控制、碳鋼熱處理、合金鋼熱處理、不銹鋼熱處理、工具鋼熱處理、鑄鐵熱處理、熱處理品質與製程保證。

Special Topics on Heat Treatment Engineering

3S Kuang-Hung Tseng

The aim of this course unit is to acquaint the students with the advanced principles in heat treatment of materials. The course also introduces to the students the advanced technology and engineering practices of heat treatment industry field. With the background, a course section on quality engineering topic is presented. It is hoped that it will be very useful to students who have to learn about the essential area of this processing technology. The content includes fundamentals of heat treatment, hardenability, furnaces and related equipment for heat treatment, heat treatment processes control, heat treatment of carbon steels, heat treatment of alloy steels, heat treatment of stainless steels, heat treatment of tool steels, heat treatment of cast irons, assuring quality in products and processes of heat treatment.

餐旅管理系 新增課程中英文摘要

餐旅督導實務

3 選

待聘、四上

本課程設計的主要目的在於使同學了解餐旅業督導的理念與方法，進而應用餐旅管理理論與方法於實務中。主要內容包含 1) 瞭解督導的工作範圍與管理基本概念 2) 瞭解督導的職責 3) 培養督導管理與關懷精神 4) 瞭解督導與領導的要領與技巧。透過課堂講授、實務個案教學與分組討論，期使學生知悉現今餐旅業督導策略與方法。

Hospitality supervision

3 S

TBA, F

The main objective of this course is to assist students to understand the principles of hospitality supervision, to learn the responsibility of supervisors in the industry, and to familiar with supervision skills for hospitality operations. Course contents include: hospitality management principles, leadership and communication, supervision process and principle, and supervision case study. Through taught courses and group discussion, students will be able to apply hospitality supervision theories and methods in the industry.

632047 進階餐旅英語

3 選

黃靖淑、上

此選修課程旨在訓練已稍具餐旅英語基礎的學生學習日常實用之餐旅英語會話。教學活動包括角色扮演、口頭配對練習、上台即席表演、閤家歡遊戲及經過設計之教室活動。學生可藉此廣泛學習不同情境(如：在餐廳、廚房、櫃檯、服務中心、點餐、和預約等各樣餐旅業服務場合)之應對用語。學生在各類餐旅服務情境之角色扮演中，漸能具備實用之餐旅英語會話能力及更有自信之人際關係。

632047 Advanced Hospitality English

3 S

C. H. Huang, S

This selective course aims to provide students with a better skill while making daily hospitality English conversation in practical use. Via role play, oral pair practice, spontaneous presentation on the stage, the Appreciation Game, as well as well-designed classroom activities, students are broadly exposed to practical uses of hospitality English in a variety of hospitality settings such as restaurants, kitchens, front desk, concierge, ordering food and beverage, and reservation. As a result, students are reinforced and prepared for a better hospitality conversational skill and interpersonal relationship with confidence.

632048 旅館公關管理

3 選

賴佩均、上

此選修課程旨在使學生瞭解旅館公關管理基本概念與原則。課程內容包含旅館形象建立與管理、媒體關係建立、公關活動設計和危機事件處理原則。透過相關案例的研讀討論與企業識別系統(C.I.S.)觀念之建立，使學生具備維持良好公共關係之要領與技巧，進一步培養旅館公關任務執行力。

Hotel Public Relation Management

3 S

P. J. Lai, S

This course aims at equipping students with the principle of hotel public relation (PR) management. Course contents include hotel image management, media relation, PR activities design and crisis management. By taught courses and relevant case discussions, students will understand the principle of corporate identity system (CIS), as well as being able to conduct good public relation management in hotels.

幼兒保育系 新增課程中英文摘要

592036 各國教保行政比較

2 選

林純雯、上

本課程旨在引介歐、美、日等世界主要國家幼兒教育及保育的重要政策、法規制度，以及行政概況，期能藉此發揮「他山之石，可以攻錯」之效，以作為我國幼兒教保行政實施與改進之參考。

592036 Comparative Study of Early Childhood Educational Administration 2 S Chun-Wen Lin , F

Comparative preschool education provides an exploration and analysis of early childhood educational policy in Euro, U.S.A. and Japan, and examinations of the regulations and institutions for education and care systems within advanced countries, as well as an introduction of their current situations of practice in educare administration. More specifically, it will familiarize students with characteristic and advantages of educational administration in other countries and will provide students with an opportunity to implicate in improvements and practices of early childhood educational administration in Taiwan.

592042 教保論文選讀 2 選 未定、下

本課程旨在鼓勵學生廣泛閱讀教保領域的重要論文，期許學生了解教保專業的新近研究趨勢，進而提升其論文的閱讀能力。

592042 Child Care literature 2 S , F

The aim of this course is to promote that students could read multiple literature related child care dimension for the purpose of increasing the ability of literature reading.

592056 發展遲緩篩檢 2 選 蔡惠玲、下

本課程旨在瞭解早期發展篩檢的理論依據與目的，並熟悉各種兒童發展篩檢工具的施測、操作與結果判讀。藉由示範與實際操作，精熟施測過程，並練習向家長解釋測驗結果，期能強化學生發展篩檢測驗實際操作以及與家長溝通測驗結果的能力。

592056 Developmental Screening 2 S Huei-Ling, Tsai , S

The course is designed to investigate the theoretical concepts and purposes of developmental screening and to become competent in operating developmental screening instruments. Direct experience with different screening instruments is provided to enhance the ability in delivering developmental screening and to communicate the results with the parent.

592057 特殊需求兒童類別專題討論 2 選 蔡惠玲、下

本課程旨在深入探討各種不同特殊需求兒童的障礙類別與療育方式。每年以個案探討的方式，從不同國內外案例瞭解成因以及提供特殊需求兒童完整照顧與療育的重要性與實況，期能增進對特殊需求兒童類別的認識，進而成為特殊需求兒童權益的擁護者。

592057 Seminar on Special Topics of Children with Special Needs 2 S Huei-Ling, Tsai , S

The course is designed to explore different conditions of children with special needs. Through case study from abroad and domestic to understand the cause and treatment of a specific disability and the possibilities of the child when proper treatment and care is provided. In hope that students will become an advocator for all children with special needs.

592058 教保實習(三) **2 選** **未定、下**
本課程旨在鼓勵學生參與教保相關機構的進階實習，期許學生學習產業達人的豐富經驗，靈活運用專業知識與實務技能，提升其微型創業能力。

592058 Child Care Practicum (III) **2 S** **, S**

The aim of this course is that students could be Interaction with dimension's experts. They can learn how to combine the dimension knowledge in order to increase the ability of the micro-entrepreneurship.

592059 兒童繪本賞析與應用 **2 選** **李之光、下**

本課程旨在幫助學生能認識圖畫書的意義、特質、發展史與價值，透過文學要素來分析並欣賞圖畫書的內涵，以探討圖畫書種類、了解如何選擇優良兒童讀物，再將所學習之方法，應用於幼教課程上。

592059 Appreciation and application of children's picture books **2 S** **Tze-Kuang Lee, , S**

This course is to help students understand the meaning, characteristics, development process and the value of picture books. Students will appreciate the content of the picture books by analyzing and reviewing the essential components of literacy for further discussing a variety of picture books, knowing how to select high quality children's readings. Finally, Students will apply the methods they have learned in this course in the early childhood curriculum.

592060 創造性戲劇 **2 選** **李之光、下**

本課程旨在培養學生身體語言和聲音的表達能力，並且鼓勵創造性的戲劇活動，期許學生能設計創造性戲劇課程並實際應用於課堂上。內容包括：創造性戲劇的基本概念、創造性戲劇教學法、以及各類型的戲劇活動。

592060 Creative Drama **2 S** **Tze-Kuang Lee, S**

This main purpose of this course is to cultivate students' body language and their abilities in voice expression. The students are encouraged to perform creative dramatic activities in this course. And they are expected to design the lesson plan of creative drama and then apply it in a real class setting. The content of this course includes: the basic concepts of creative drama, pedagogies of creative drama and other types of drama activities.

596021 兒童戲劇專題研究 **3 選** **李之光**

本課程旨在協助學生獲得兒童戲劇評論能力。主要探討兒童戲劇之基本內涵、理論基礎、派別與演出流程，並了解其創作理念。學生於課程結束後將能撰寫與兒童戲劇相關之研究論文摘要。

596021 Studies in Children's Drama **3 S** **Tze-Kuang Lee**

This course has intent to assist students obtaining the ability to critique children drama. The course primarily explores the fundamental content of children drama. The theoretical foundation, schools and performing procedures of children drama are included in this course. The students will finally find the ideas behind the creation of children drama. The students are required to write research papers relative to children drama after the course ends.

休閒運動保健系碩士在職專班

(一)教育目標

本所之成立目的為培養休閒產業與健康促進之專業研究人才為主要目標，並整合台灣南部休閒產業與健康促進之產、官、學相關研究資源，推動國內休閒產業研究與健康促進活動與計畫，期能達成提昇國人生理、心理與社會之福祉目標。

(二)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	
研究方法 Research Methods	3	3				
高階應用統計學 Advanced Applied Statistics	3	3				
休閒經營專題研究 Special Topics on Recreation and Health Management	3	3				
專題討論(一) Seminar I	1		1			
健康促進專題研究 Special Topics on Health Promotion	3		3			
休閒與健康機構實務 Practical Training of Leisure and Health Institution	1			1		
專題討論(二) Seminar II	1			1		
碩士論文 Master Thesis	6			3	3	
合 計	21	9	4	5	3	

(三-1) 休閒產業管理組選修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
休閒行為專題研究 Special Topics on Leisure Behavior	3	3				
運動休閒人力資源管理專題研究 Special Topics on Recreation and Health Promotion Human Resources Management	3	3				

中 文 科 目 名 稱 英	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
休閒運動設施維護與管理專題研究 Special Topics on Maintenance and Management of Recreational Sport Facilities	3	3				
休閒教育專題研究 Leisure Education Study	3	3				
休閒社會學專題研究 Special Topics on Sports and Leisure Sociology	3		3			
體驗與冒險教育專題研究 The Study of Experiential and Adventure Education	3		3			
休閒行銷管理專題研究 Special Topics on Recreation Marketing Management Strategy	3		3			
質性研究 Qualitative Research	3		3			
多變量分析 Multivariate Analysis	3		3			
水域遊憩管理專題研究 Special Topics on Water-base Recreation Management	3			3		
運動觀光專題研究 Special Topics on Sports Tourism	3			3		
戶外遊憩專題研究 Special Topics on Outdoor Recreation	3			3		
休閒產業政策研究 Policies Study of Leisure Industries	3			3		
冒險治療與領導專題研究 Special Topics on The Study of Adventure Therapy and Leadership	3				3	
休閒經營診斷與分析專題研究 Recreation Industries Diagnose and Analyses	3				3	
休閒遊憩方案規劃與設計專題研究 Design and Planning of Leisure and Recreation Programs	3				3	
合 計	48	12	15	12	9	

(三-2) 休閒產業管理組選修科目

中 英 文 科 目 名 稱	學 分 數	第一學年		第二學年		備 註
		上	下	上	下	
運動能量代謝與策略專題研究 Special issue on the Exercise Metabolism and Strategy	3	3				
體適能專題研究 Special Topics on Physical Fitness Research Project	3	3				
健身運動心理學專題研究 Special Topics on Exercise Psychology	3		3			
社區健康營造專題研究 Special Topics on Healthy Community Building	3			3		
運動健康與資訊管理專題研究 Special Topics on Information Management and Exercise Health	3			3		
特殊需求族群健康促進專題研究 Special Topics on The Research of the Health Promotion for the Special Needed Group	3				3	
訓練學理論與策略專題研究 Special Topics on Sport Training	3				3	
合 計	21	6	3	6	6	

國立屏東科技大學 休閒運動保健系 碩士在職專班課程規劃表

學年	第一學年				第二學年				學分總計	
學期	第一學期		第二學期		第三學期		第四學期			
修別	科目	學分	科目	學分	科目	學分	科目	學分		
必修	研究方法 高階應用統計學 休閒經營專題研究	3 3 3	專題討論(一) 健康促進專題研究	1 3	碩士論文 休閒與健康機構實習 專題討論(二)	3 1 1	碩士論文	3		
小計		9		4		5		3	21	
選修	休閒產業管理組	休閒行為專題研究 運動休閒人力資源管理專題研究 休閒運動設施維護與管理專題研究 休閒教育專題研究	3 3 3 3	休閒社會學專題研究 體驗與冒險教育專題研究 休閒行銷管理專題研究 質性研究 多變量分析	3 3 3 3 3	水域遊憩管理專題研究 運動觀光專題研究 戶外遊憩專題研究 休閒產業政策研究	3 3 3 3	冒險治療與領導專題研究 休閒經營診斷與分析專題研究 休閒遊憩方案規劃與設計專題研究	3 3 3	
	運動保健組	運動能量代謝與策略專題研究 體適能專題研究	3 3	健身運動心理學專題研究	3	社區健康營造專題研究 運動健康與資訊管理專題研究	3 3	特殊需求族群健康促進專題研究 訓練學理論與策略專題研究	3 3	
小計		18		18		18		15	69	

* 註：1.本系學生至少應修滿 36 學分始得畢業(其中必修應修 21 學分，選修 15 學分；分組專業選修至少 12 學分，跨組選修至少 3 學分)
2.上述修課限制為本系論文計畫書審查要點

休閒運動保健系碩士在職專班

Department of Recreation Sport & Health Promotion

課程代號 Course Number	科目名稱(中文) Course (Chinese)	學分 Credit	科目名稱(英文) Course (English)	頁次 Page
專業必修科目 Required Courses				
646001	研究方法	3	Research Methods	
646002	高階應用統計學	3	Advanced Applied Statistics	
646003	休閒經營專題研究	3	Special Topics on Recreation and Health Management	
646004	專題討論(一)	1	Seminar(I)	
646005	健康促進專題研究	3	Special Topics on Health Promotion	
646006	專題討論(二)	1	Seminar(II)	
646007	休閒與健康機構實務	1	Practical Training of Leisure and Health Institution	
646008	碩士論文	6	Master Thesis	
專業選修科目 Elective Courses				
646009	休閒行為專題研究	3	Special Topics on Leisure Behavior	
646010	運動休閒人力資源管理專題研究	3	Special Topics on Recreation and Health Promotion Human Resources Management	
646011	休閒運動設施維護與管理專題研究	3	Special Topics on Maintenance and Management of Recreational Sport Facilities	
646012	休閒教育專題研究	3	Leisure Education Study	
646013	運動能量代謝與策略專題研究	3	Special issue on the Exercise Metabolism and Strategy	
646014	體適能專題研究	3	Special Topics on Physical Fitness Research Project	
646015	休閒社會學專題研究	3	Special Topics on Sports and Leisure Sociology	646016
	體驗與冒險教育研究	3	The Study of Experiential and Adventure Education	
646017	休閒行銷管理專題研究	3	Special Topics on Recreation Marketing Management Strategy	
646018	質性研究	3	Qualitative Research	
646019	多變量分析	3	Multivariate Analysis	
646020	健身運動心理學專題研究	3	Special Topics on Exercise Psychology	
646021	水域遊憩管理專題研究	3	Special Topics on Water-base Recreation Management	
646022	運動觀光專題研究	3	Special Topics on Sports Tourism	
646023	戶外遊憩專題研究	3	Special Topics of Outdoor Recreation	
646024	休閒產業政策研究	3	Policies Study of Leisure Industries	
646025	社區健康營造專題研究	3	Special Topics on Healthy Community Building	
646026	運動健康與資訊管理專題研究	3	Special Topics on Information Management and Exercise Health	

休閒運動保健系碩士班

Department of Recreation Sport & Health Promotion

課程代號 Course Number	科目名稱(中文) Course (Chinese)	學分 Credit	科目名稱(英文) Course (English)	頁次 Page
646027	冒險治療與領導專題研究	3	Special Topics on The Study of Adventure Therapy and Leadership	
646028	休閒經營診斷與分析專題研究	3	Recreation Industries Diagnose and Analyses	
646029	休閒遊憩方案規劃與設計專題研究	3	Design and Planning of Leisure and Recreation Programs	
646030	特殊需求族群健康促進專題研究	3	Special Topics on The Research of the Health Promotion for the Special Needed Group	
646031	訓練學理論與策略專題研究	3	Special Topics on Sport Training	

休閒運動保健系碩士在職專班

Department of Recreation Sport & Health Promotion

二、必修科目 Required Courses

646001 研究方法 3 必 劉照金、上

本課程的目的，在讓學生學習如何以一科學的程序與方法，來蒐集和分析休閒與保健產業經營上相關的資訊，以協助休閒運動產業擬定決策，解決其經營管理上，所面臨的問題。主要內容包括：研究程序、初級資料蒐集方法、概念的衡量，抽樣與現場作業管理、資料整理與分析、研究報告撰寫。

646001 Research Methods 3 R C. C. Liu, F

This course will provide a comprehensive coverage of the research process and methods in the recreation and health business settings to improve the quality of recreation and health business decision-making and solve the management problems in a scientific way. The major subjects will cover: introduction, research process, research methods for collecting primary data, measurement concepts, sampling and fieldwork, data analysis and paper writing.

646002 高階應用統計學 3 必 馬上閔、上

本課程提供了一套從統計的知識、軟體的操作到實際應用的能力訓練。將量化研究的實務工作與 SPSS 及 LISREL 視窗版軟體的應用加以整合，並著重統計方法在休閒運動保健領域上應用的實例。

646002 Advanced Applied Statistics 3 R S.M. Ma, F

The purpose of this course is to provide basic training for competence in statistical knowledge, software usage and research practice. With introduction for the statistical software of SPSS and LISREL, students will learn how to apply these tools to researches in recreational sport and health promotion.

646003 休閒經營專題研究 3 必 巫昌陽、上

本課程主要目的在建立休閒經營理論與實務專業知識。課程主題將包括休閒與保健產業經營的服務需求、商品化、產業組合、永續經營、經營策略、競爭力、服務作業、服務品質、承載量、財務收支、促銷運用等休閒與保健產業經營之探討。

646003 Special Topics on Recreation and Health Management 3 R C. Y. Wu, F

The purpose of this course is to teach student the professional knowledge of management theory and practical experience in the recreation and health business settings. The contents of this course include demand, commodity, industrial constitute, sustainable management, and analysis of the Recreation and Health Business service organization include strategy, competition capability, service operation, service quality, carrying capacity, financial balance and promotion.

646004 專題討論(一) 1 必 輪授、下

本課程旨在提供全體師生一個共同研討休閒與保健產業經營學術與實務新知的交流平台，藉由專題演講、論文報告、校外參訪與心得報告，或角色扮演、文化巡禮等活動，來增進師生互動與情誼，並使學生學習到具有人文藝術素養的最新休閒與保健產業經營知識

646004 Seminar (I) 1 R All Teachers, S

This curriculum is designed a platform for all teachers and students interaction in academic activities of recreation and health business settings. The activities in the course include making

keynote speech, dissertation presentation, go sightseeing institution and report, role-playing, and cultural learning. The course aims to enhance affiliation and understanding in the graduate institution and expects students learned more in recreation and health business settings with art and humanity.

646005 健康促進專題研究 3 必 徐錦興、曹德弘、下

本課程之目的主要為提供研究所學生對健康促進概念之了解，在文獻導讀方式課程方式中，讓學生了解不同之健康促進理論，並經由課程討論及文獻分析，探討運動與健康促進之關係。期經由本課程能引發學生對於健康促進理論之了解，且能正確使用於實際生活應用中。

646005 Special Topics on Health Promotion 3 R C. H. Hsu, T. H. TSAO, S

The course of 「Seminar on Health Promotion」 is designed to encourage graduated students from varying backgrounds to obtain the knowledge and skills which is necessary for developing appropriate approaches to evidence-based health promotion, in addition, to direct at practitioners aspiration to upgrade students' knowledge. The purpose of this course is to guide students how to read the literature reviews, so that students can get more awareness how to promote healthy lifestyle through the means of exercise. The content of this course includes various theories of exercise psychology on health-related behavior. Apply psychological guidance and skill on recreational sports fields will be also discussed.

646006 專題討論(二) 1 必 輪授、上

本課程旨在提供全體師生一個共同研討休閒與保健產業經營學術與實務新知的交流平台，藉由專題演講、論文報告、校外參訪與心得報告，或角色扮演、文化巡禮等活動，來增進師生互動與情誼，並使學生學習到具有人文藝術素養的最新休閒與保健產業經營知識。

646006 Seminar (II) 1 R All Teachers, F

This curriculum is designed a platform for all teachers and students interaction in academic activities of recreation and health business settings. The activities in the course include making keynote speech, dissertation presentation, go sightseeing institution and report, role-playing, and cultural learning. The course aims to enhance affiliation and understanding in the graduate institution and expects students learned more in recreation and health business settings with art and humanity.

646007 休閒與健康機構實務 1 必 各教師、上

本課程主要目標在透過學生校外機構的實作經驗，來結合學校課堂內的理論，使學生能夠理論與實務並重，提升職場競爭力。

646007 Practical Training of Leisure and Health Institution 1 R All Teachers, F

The aim of this course is to combine the practical experiences and academic theories for students so as to enhance their abilities of job competition.

646008 碩士論文 6 必 各教師、上

本課程主要是在於訓練碩士班研究生正確的研究態度與研究能力，經由對專業方向的研究，期使培養研究生的獨立研究能力

646008 Master Thesis 6 R All Teachers, F

The main purpose of course is to train the learners to be dependent researchers. Though taking this course, the students will have correct research attitudes and ability, and to be an excellent researcher.

四、選修科目 Elective Courses

646009 休閒行為專題研究 3 選 吳崇旗、上

本課程以休閒遊憩中的人類行為研究為主題，經由國內外休閒研究專書與期刊論文研讀與評析，瞭解現今休閒研究趨勢，並提供未來休閒行為研究的概念啟發。

646009 Special Topics on Leisure Behavior 3 S C. C. Wu, F,

The main topics of this course are about leisure, recreation and human behavior. Through reading and criticizing international and domestic journal papers about leisure research, this course provides current trend and inspiration in future leisure studies.

646010 運動休閒人力資源管理 3 選 巫昌陽、上、無
專題研究

本課程主要著重於休閒與保健產業所屬人力之工作分析、選訓、發展、薪酬及績效評估等人事管理的理論基礎作完整且全面的檢視，並透過心得與實務應用例子報告，培養學生搜集有關人力資源管理資料，提出研究專討及討論解決方法，並訓練學生之表達、研究能力與實用技巧。

646010 Special Topics on Recreation and Health Promotion Human Resources Management 3 S C. Y. Wu, F,

This course focuses on recreation and job analysis of the industry's affiliated manpower of health care mainly, select to train, develop, the salary and performance are assessed, etc. The theoretical foundation of personnel management does intact and overall looking over, and use the example report through gains and practice, train students to collect the relevant manpower resources management materials, propose studying and demanding and discussing the solution specially, train students' expression, study ability and practical skill.

646011 休閒運動設施維護與管理 3 選 馬上閔、上
專題研究

本課程主要目的在經由國內外實務案例的介紹，建立學生休閒運動設施維護與管理理論與實務的專業知識。課程主題將包括運動場館規劃與注意事項、室外運動場地維護與規劃、運動中心、運動面材、運動照明、民間參與公共運動設施探討、主要場地設施標準規範等之探討。

646011 Special Topics on Maintenance Management of Recreational Sport Facilities 3S S. M. Ma, F, and

The purpose of this course is to build up a strong theoretical and a practical knowledge about maintenance and management of recreational sport facilities for students through analyzing the most updated cases around the world. Special topics included in this course are issues on planning and management of recreational sport facilities, civil sports center, sports lighting, legal aspect of managing sport facilities, and regulations and standards for building sport facilities.

646012 休閒教育專題研究 3 選 劉子利、上

本課程主要在介紹休閒及休閒教育的內涵與相關理論，並探討國內當前休閒教育的現況與未來發展趨勢。

646012 Leisure Education Study 3 S T. L. Liu, F

The course introduces mainly the connotations and theories of leisure and leisure education, and to explore the current situation and further development of leisure education in Taiwan.

646013 運動能量代謝與策略專題研究 3 選 曹德弘、上

本課程目的：瞭解運動時能量代謝，特別是碳水化合物、脂質、蛋白質。再者，結合理論與食物增補，促進運動表現。

646013 Special issue on the Exercise Metabolism and Strategy 3S T.H.TSAO, F

The goals of this class are to understand the energy metabolism during exercise, especially carbohydrate, lipid, and protein. In addition, combining theory and food supplementation and increasing sport performance are another goal in this class.

646014 體適能專題研究 3 選 曹德弘、上

本課程旨在使學生瞭解體適能的中心概念與評估體適能的方法。所包含主題有：個人健康狀況調查；漸增運動能力測試；心電圖記錄與基本解讀；肌力與肌耐力評估；身體組成分析；肺功能測試；心血管疾病風險評估分析及個案研究與運動處方的設計。

646014 Special Topics on Physical Fitness Research Project 3 S T. H. TSAO, F

The aim of this class is to study the concepts and techniques for evaluating physical fitness. Topics include health and medical histories, graded exercise capacity testing, ECG recording and basic interpretation, muscular strength and endurance assessment, body composition analysis, pulmonary function tests, CHD risk-factor analysis. Lab results and case studies are used to practice writing exercise prescriptions.

646015 休閒社會學專題研究 3 選 劉照金、下

本課程主要目的在探討休閒及運動產業從業人員基本社會學觀念，由社會學的角度透視休閒運動產業現象。授課內容包括休閒運動社會學之理論、休閒運動與文化、團體、教育、政治、經濟等社會力之相互關係；休閒及運動的社會結構與機能、休閒及運動文化、休閒及運動團體、休閒及運動與教育、休閒及運動與經濟、休閒及運動與政治等。

646015 Special Topics on Sports and Leisure Sociology 3 S Chao-Chin Liu、S

The main purpose of this course is to engage in recreational sports industries with basic concepts of sociology from the theory of sociology to view recreational sports phenomenon. The contents of this course include the meaning and theory of recreational sports sociology; the mutual relationships among recreational sports, cultures, organizations, education, politics, economy, social structure and function of recreational sports; recreation and sports culture, sports organizations, education, economy and politics...etc.

646016 體驗與冒險教育專題研究 3 選 吳崇旗、下

本課程主要目的是在介紹「體驗教育」及其次領域—「冒險教育」的概念、現今重要研究議題，透過課堂上的討論與報告，建構體驗與冒險教育的研究架構藍圖。

646016 The Study of Experiential and Adventure Education 3S C. C. Wu, S

The purpose of this course is to provide the blue print for research in “Experiential and Adventure Education” field through introduction, discussion and presentation for current issues of experiential education and adventure education.

- 646017 休閒行銷管理專題研究 3 選 巫昌陽、下、無
- 本課程主要目的介紹休閒行銷管理之最新觀念、程序與理論架構，並討論行銷最新趨勢與主題，如顧客滿意、服務行銷、非營利機構行銷、直接行銷及零售管理與培養學生搜集有關行銷專題資料，提出研究專討及討論解決方法，並訓練學生之表達能力及研究能力。
- 646017 Special Topics on Recreation 3 S C. Y. Wu, S, Marketing Management Strategy
- This main purpose of course introduces the latest idea and topic, the procedure and theory structure of recreation marketing management, discuss the newest trend of marketing, if customer satisfied serving marketing, non-commercial organization marketing, direct marketing and is it relate to train students to collect the thematic materials of marketing to manage to retail, propose studying and demanding and discussing the solution specially, train students' ability to express and research ability.
- 646018 質性研究 3 選 劉子利、下
- 本課程旨在探討質性研究的意義與內涵，並介紹各種質性研究的方法與資料蒐集技術，期能引發學生對本學科的興趣，進而培養學生從事休閒質性研究之能力。
- 646018 Qualitative Research 3 S T. L. Liu,S
- This course is designed to explore the meaning and connotation of qualitative research, and to introduce the methods and datum selection technique in this field, so as to cultivate the interests and abilities of students.
- 646019 多變量分析 3 選 馬上閔、下
- 探討多變量統計分析方法，尤其是多元迴歸、多變量變異數與共變數分析等方法的觀念、原理、計算方法、解釋原則，以及各種統計軟體的運用。
- 646019 Multivariate Analysis 3 S S.M. Ma S
- This course is to study the concept, principle, theory, elementary operation, interpretation of multivariate statistical methods, especially focus on the multiple regression, multivariate analysis of variance and covariance, and to use statistical packages for working out the statistical examples.
- 646020 健身運動心理學專題研究 3 選 馬上閔，下
- 健身運動心理學專題研究為一進階課程，期能提供研究所學生對健身運動之心理相關議題與行為表現有更深一層之認識與了解，並能於課程中將理論應用於實務推廣層面。課程之內容除介紹健身運動心理學之各項理論與議題，並將包含部分健康心理學及競技心理學議題。
- 646020 Special Topics on Exercise 3 S S.M. Ma, S Psychology
- The purpose of this course is to progress research abilities for students in the master's program on issues regarding exercise psychology. Students will have opportunities to learn and discuss the major issues on exercise psychology, moreover, to increase and perform on research project, and acquire practical experiences in the real setting. Course contents is included not only theories of exercise psychology, but also the major theories of health psychology and sports psychology.
- 646021 水域遊憩管理專題研究 3 選 巫昌陽、上
- 本課程主要目的是希望透過理論與實務的引導與實地勘查，期望學生能深入瞭解水域遊憩的管理，提供參與者安全、深度的體驗。介紹水域遊憩的定義與範圍、水域遊憩當前問題與發展課題，服務品質與體驗滿意度、水域遊憩衝突管理，配合台灣實際水域遊憩現況個案探討，提出研究專討及討論解決方法，並訓練學生之表達能力及研究能力。

646021 Special Topics on Water-base Recreation 3S
Management

C.Y.Wu,F

The main purpose of this course is to convey, through theory and practice of guidance and the field survey, that students are expected to know in depth the management of recreational waters, providing participants the security, in-depth experience. Recreational waters introduce the definition and scope of the waters of open questions and development of the current issues, service quality and experience the satisfaction, the waters of open conflict management, coupled with the actual waters of the Taiwan Open Discussion on the status of cases, the researchers review and discuss solutions, and to train students ability to express and research capacity.

646022 運動觀光專題研究 3 選 劉照金、上

本課程主要目的在探討運動觀光之經營管理觀念。授課內容包括：探討運動觀光之理論、產業特性、關鍵成功因素、參與行為、設施服務規劃、經營管理、行銷規劃及運動觀光設施服務個案探討。

646022 Special Topics on Sports 3 S C. C. Liu , F
Tourism

The purpose of this course is to explore the concept of management regarding infrastructures of sport tourism. The contents of this course include the theory, business characteristic, critical factor, current situation, sport tourism behavior, plan, management, marketing and case study of infrastructures of sport in relation to tourism destination.

646023 戶外遊憩專題研究 3 選 吳崇旗、上

本課程目的希冀透過戶外遊憩議題、未來發展趨勢及管理策略的研讀與評析，提供後續研究構思的參考與基礎。

646023 Special Topics on Outdoor 3 S C. C. Wu, F
Recreation

The purpose of this course is to provide reference and foundation for future studies in outdoor recreation management through reading and criticizing journal papers about outdoor recreation, future trend and management strategies.

64624 休閒產業政策研究 3 選 劉子利、上

本課程邀請產官界的專家來介紹與分析台灣當前相關的休閒產業政策，期能讓學生了解政策的利與弊以及它對休閒產業的發展有何影響。

646024 Policies Study of Leisure 3 S T. L. Liu, F
Industries

The curriculum invites the specialist and official to introduce and analyze the leisure industries policies in Taiwan for students so as to understand the advantages and shortage of policies and its influence.

646025 社區健康營造專題研究 3 選 徐錦興、上

社區健康營造專題屬進階課程，旨在提供研究生有關社區健康營造之理論與實務。課程內容包含社區居民之運動及飲食行為、實務與政策等相關議題，以及目前政府公部門之執行現況及健康城市之未來展望。透過本課程，學生亦期能培養建構多樣之社區健康營造介入策略的能力

646025 Special Topics on Healthy 3 S C. H. Hsu,F
Community Building

This is an advanced course providing gradated students the opportunity to study a variety of

issues on healthy community building , and different models and successful experiences of health community and health city as well. Course involves health behavior, practice, research, and policies regarding intervention at the community level. Students will have opportunities to explore and discuss current issues of exercise and diet, to develop and conduct a research project, and gain practical experiences in the real setting. Graduated students are also anticipated to build advance research abilities through this course.

646026 運動健康與資訊管理 3 選 徐錦興、上
專題研究

資訊科技發展迅速，已經成為各學科領域在策略發展中不可或缺的工具。本課程之主要目的在提供資訊科技的入門介紹，其中包含網站管理與資料庫設計之原理與實用技術。期透過本課程能教導研究所學生了解並應用資訊科技於休閒管理與健康促進等不同領域，以達到電子行銷、資料整合及實務管理的課程目的。

646026 Special Topics on Information 3 S C. H. Hsu, F
Management and Exercise Health

This course intends to provide a comprehensive introduction to information technology theory and practical techniques while multimedia communications are becoming more powerful and convenient to reach. This course focuses on how information technology has influenced upon the modern management activities, and how to design a website with a database adopted information technology. The possessing ability of practical design on recreation management and health promotion is also required.

646027 冒險治療與領導專題研究 3 選 吳崇旗、下

本課程是為「體驗與冒險教育研究」的進階課程，將更全面探究以企業訓練與弱勢族群為對象，介紹冒險治療與領導的現況、重要議題與未來趨勢，提供後續研究的概念。

646027 Special Topics on The Study of 3 S C. C. Wu, S
Adventure Therapy and Leadership

The purpose of this course is to provide advanced studies in “Experiential and Adventure Education” with investigation into issues about adventure therapy and leadership aim at corporate training as well as disadvantaged groups to stimulate ideas for future researches.

646028 休閒經營診斷與分析專題研究 3 選 巫昌陽、下、無

本課程之目的在於介紹企業診斷方法，並配合實際參訪與個案分析以培養學生具備休閒產業經營分析及企業診斷的基本能力，並透過心得與實務應用例子報告，培養學生搜集有關人力資源管理資料，提出研究專討及討論解決方法，並訓練學生之研究能力與實用技巧。

646028 Recreation Industries Diagnose 3 S C. Y. Wu, S, and Analyses

The purpose of this course lies in recommending enterprises to diagnose the method, cooperate and join and visit analysing with the case that possesses performance analysis of recreation industry and basic ability which enterprises diagnose in order to train students actually, and use the example report through gains and practice, train students to collect the relevant manpower resources management materials, propose studying and demanding and discussing the solution specially, train students' research ability and practical skill.

646029 休閒遊憩方案規劃與設計 3 選 劉子利、下

本課程旨在培養學生休閒方案規劃之能力，作為未來職場之準備。再者，培養專業的休閒遊憩規劃人才，促進台灣休閒產業之發展。

646029 Design and Planning of Leisure 3 S T. L. Liu, S

and Recreation Programs

This course is designed to cultivate the abilities of leisure program planning for students to settle down their job in the future. This curriculum also trains the professional of leisure program planning to promote the development of leisure industries in Taiwan.

646030 特殊需求族群健康促進 3 選 陳敏弘、下
專題研究

本課程旨在針對特殊群體之健康促進議題，進行相關議題之專題討論。其授課內容之特殊群體包括高齡者、身心障礙者、孕婦及其它俱有特殊需求者。授課內容包含各種特殊群體之需求評估、相關研究文獻導讀、各種特殊群體健康促進模式的建立方法的優缺點及適用性比較。

646030 Special Topics on The Research 3S M. H. CHEN, S
of the Health Promotion for the Special
Needed Group

This course is designed to guide students to discuss the health promotion topic related to the special needed group. The content includes the assessment the requirement of the special needed group including aging, disable and pregnancy person, reviewing related worldwide literatures, and comparing the advantage and disadvantage of different health promotion models implementing for special needed group.

646031 訓練學理論與策略專題研究 3 選 曹德弘、下

本課程目的:介紹不同的運動訓練法，並針對運動項目的特殊性，並運用適當的訓練法增進運動員的表現。

646031 Special Topics on Sport Training 3 S T H. TSAO, S

The aim of this class is to introduce different methods of sport training. To increase sport performance, applying suitable training regime is necessary according to the specificity of sport item.

四年制動物科學與畜產系「產學攜手計畫專班」

(一)教育目標

培育現代化畜產生產與經營管理人才，並著重於畜牧自動化生產經營之理論與實務的傳授及訓練，且依學生志願習得相關知識技能，使學生畢業後能從事牧場經營及包括家禽、豬、牛等禽畜之飼養管理、飼料製造品管、畜產品加工製造與品管、及污染防治技術等工作，以及使學生具備繼續深造之能力。此外，期能經由傳統畜牧生產科技與畜產生物科技之結合應用，俾使學生掌握時代脈動，並能將最新技術推展至業界，以增進台灣畜產業界的整體競爭力。

(二)校定共同必修科目

中文科目名稱 英	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	
通識課程 General Education	12	2	2	2	2			2	2	
國文 Chinese	4	2	2							
大一英文 English	4	2	2							
英語聽講練習 101~104 Oral-Aural Training in English	2	0	0	1	1					
憲法 Constitution	2				2					
體育 Physical Education	2	1	1							
軍訓 Military Training	0	0	0							
生活服務教育 Student Life Service Education	0	0	0							
通識教育講座 Lectures on General Education	1									各系依序開課，開課學期不定
外語實務 Foreign Language Proficiency Test	0									每學期開放修課，畢業前修畢
合計	27	7	7	3	5	0	0	2	2	

(三) 學院共同必修科目

中 文 科 目 名 稱 英	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 General Chemistry	3	3								
普通化學實習 General chemistry Lab	1	1								
動物學 Zoology	2	2								
動物學實習 Practice of Zoology	1	1								
生態學 Ecology	2		2							
電子計算機概論 Introduction to Computers	0		0							
生物統計 Biometry	2	2								
生物統計實習 Biometry Lab.	1	1								
生物技術 Biotechnology	2							2		
實務專題 Special project	2							1	1	
合 計	16	10	2	0	0	0	0	3	1	

(四)專業必修科目

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	
畜產微生物學 Microbiology of Animal Products	2		2							
動物解剖生理學 Anatomy and Physiology of Livestock	3		3							
動物解剖生理學實習 Laboratory of the Anatomy and Physiology in Livestock	1		1							
肉品原料與利用 Raw material quality and utilization of meat	2			2						
乳、蛋品原料與利用 Raw material quality and utilization of milk and eggs	2				2					
生物化學 Biochemistry	2			2						
生物化學實習 Biochemistry Lab.	1			1						
牧場實務實習 Animal Farm Practice	2					1	1			
動物遺傳學 Animal Genetics	2		2							
動物營養學 Animal Nutrition	2				2					
豬隻飼養管理 Pig Feeding and Management	1			1						
豬隻飼養管理實習 Practice of Pig Feeding and Management	1					1				
家禽飼養管理 Poultry Feeding and Management	1			1						
家禽飼養管理實習 Practice of Poultry Feeding and Management	1						1			
動物育種學 Animal Breeding	2			2						
經濟動物繁殖學 Reproductive of Farm Animal	2							2		

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	
動物舍規劃與自動化 Animal House Arrangement and Automation	2							2		
乳用家畜飼養管理 Dairy Livestock Feeding and Management	1				1					
乳用家畜飼養管理實習 Practice of Feeding and Management in Dairy Livestock	1						1			
禽畜保健 Livestock Health	4			2	2					
禽畜保健實習 Practice of Livestock Health	2					1	1			
專題討論	2							1	1	
合 計	39	0	8	11	7	3	4	5	1	

(五)專業選修科目

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	
畜產機械 Animal Production Machinery	2	2								
畜產機械實習 Practice of Animal Production Machinery	1	1								
動物行為 Animal Behavior	2	2								
食品與餐飲法規 Law and Regulation of Food and Foodservice Management	2	2								
畜產生物多樣性 Biodiversity in Farm Animal	2	2								
禽畜環境生理學 Environmental Physiology of Domestic Animals	2	2								
畜產檢驗與分析 Analysis of Animal Products	2	2								
畜產檢驗與分析實習 Animal Products Analysis Practice.	1	1								
農業政策與法規 Agricultural Policy and Laws.	2		2							
有機化學 Organic Chemistry	3		3							
有機化學實習 Organic Chemistry Lab.	1		1							
動物福利 Animal Welfare	2		2							
實驗動物應用學 Application of Laboratory Animals	2		2							
實驗動物應用學實習 Application of Laboratory Animals Practice	1		1							
無特定病原實驗動物飼養與管理 Specific Pathogen Free Laboratory Animal Feeding and Management	2			2						

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	
無特定病原實驗動物飼 養管理與實習 Specific Pathogen Free Laboratory Animal Feeding and Management Practice.	1			1						
蛋品加工 Processing of Egg Products	2			2						
動物內分泌學 Animal Endocrinology	2			2						
細胞生物學 Cell Biology	3			3						
免疫學 Immunology	3			3						
飼料配方設計 Design of Feed Formulation	2				2					
水禽飼養管理 Waterfowl Feeding and Management	2				2					
應用生物統計學 Application Biostatistics	2				2					
禽畜副產物利用 Utilization of Animal and Poultry Byproducts	2				2					
肉品加工 Processing of Meat Products	2				2					
分子生物學 Molecular Biology	3				3					
反芻動物營養與飼料 Ruminant Nutrition and Feed	2				2					
馬學 Equine Science	2				2					
肉用草食家畜飼養管理 Meat-production Ruminant Farm Animal Feeding and Management	2				2					
馬學實習 Equine Science Practice.	1					1				
飼料製造技術實習 Feed Manufacture Technology Practice.	1					1				

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	
肉品加工實習 Meat Products Lab Practice.	1					1				
乳品加工實習 Dairy Processing Practice.	1						1			
蛋品加工實習 Egg Products Lab Practice.	1						1			
畜產企業實務實習 Practice of Livestock Enterprises	1						1			
乳品加工 Processing of Dairy Products	2							2		
經濟動物繁殖技術 Live stocks Reproductive Techniques	1							1		
飼料製造技術 Feed Manufacture Technology	2							2		
鹿學 Deer Science	2							2		
安全畜產品生產導論 Introduction to Safe Animal Production	2							2		
安全畜產品生產技術 Techniques of Safe Animal Production	2							2		
安全畜產品檢驗與品管 Safe Animal Products Analysis and Quality Control	2							2		
兔學 Rabbits Science	2							2		
加工廠經營管理導論 Introduction to Food Processing Plant Management	2								2	
學士論文 Dissertation	1								1	
牧場經營學 Livestock Production Management	2								2	
寵物飼養管理 Pet Feeding and Management	2								2	
禽畜廢棄物管理 Poultry and Livestock Waste Management	2								2	

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	
禽畜廢棄物管理實習 Poultry and Livestock Waste Management Practices	1								1	
現代動物育種技術 Modern Animal Breeding Technology	2								2	
生物資訊學概論 Introductory Bioinformatics	2								2	
合 計	92	14	11	13	19	3	3	15		

國立屏東科技大學 動物科學與畜產系 產學攜手計畫專班四年制課程規劃表

學年	一 學 年				二 學 年			
學期	第 一 學 期		第 二 學 期		第 一 學 期		第 二 學 期	
修別	科 目	學 分	科 目	學 分	科 目	學 分	科 目	學 分
必 修	國文	2	國文	2	通識課程	2	通識課程	2
	英文	2	英文	2	英語聽講練習(103)	1	英語聽講練習(104)	1
	體育	1	通識課程	2	生物化學	2	憲法	2
	通識課程	2	體育	1	生物化學實習	1	動物營養學	2
	英語聽講練習 101	0	英語聽講練習 102	0	肉品原料與利用	2	乳蛋品原料與利用	2
	普通化學	3	電子計算機概論	0	豬隻飼養管理	1	乳用家畜飼養管理	1
	普通化學實習	1	生活服務教育	0	家禽飼養管理	1	禽畜保健	2
	動物學	2	動物解剖生理學	3	禽畜保健	2		
	動物學實習	1	動物解剖生理學實習	1	動物育種學	2		
	生物統計	2	生態學	2				
	生物統計實習	1	軍訓	0				
	軍訓	0	畜產微生物學	2				
	生活服務教育	0	動物遺傳學	2				
	小計		17		17		14	
選 修	食品與餐飲法規	2	有機化學	3	動物內分泌學	2	應用生物統計學	2
	動物行為	2	有機化學實習	1	細胞生物學	3	馬學	2
	畜產機械	2	動物福利	2	免疫學	3	肉用草食家畜飼養管理	2
	畜產機械實習	1	農業政策與法規	2	蛋品加工	2	禽畜副產物利用	2
	畜產生物多樣性	2	實驗動物應用學	2	無特定病原實驗動物飼	2	飼料配方設計	2
	畜產檢驗與分析	2	實驗動物應用學實習	1	養與管理		水禽飼養管理	2
	畜產檢驗與分析實習	1			無特定病原實驗動物飼	1	分子生物學	3
	禽畜環境生理學	2			養與管理實習		反芻動物營養與飼料	2
							肉品加工	2
小計		14		11		13		19

國立屏東科技大學 動物科學與畜產系 產學攜手計畫專班四年制課程規劃表

學年	第三學年				第四學年				學分總計
	第一學期		第二學期		第一學期		第二學期		
修別	科目	學分	科目	學分	科目	學分	科目	學分	
必修	豬隻飼養管理實習(校外實習)	1	乳用家畜飼養管理實習(校外實習)	1	實務專題	1	實務專題	1	
	禽畜保健實習(校外實習)	1	家禽飼養管理實習(校外實習)	1	通識課程	2	通識課程	2	
	牧場實務實習(校外實習)	1	禽畜保健實習(校外實習)	1	專題討論	1	專題討論	1	
					動物舍規劃與自動化	2			
			牧場實務實習(校外實習)	1	生物技術	2			
					經濟動物繁殖學	2			
小計		3		4		10		4	81
選修	飼料製造技術實習(校外實習)	1	乳品加工實習(校外實習)	1	經濟動物繁殖技術	1	學士論文	1	
	肉品加工實習(校外實習)	1	蛋品加工實習(校外實習)	1	安全畜產品檢驗與品管	2	寵物飼養管理	2	
	馬學實習(校外實習)	1	畜產企業實務實習(校外實習)	1	乳品加工	2	禽畜廢棄物管理	2	
					安全畜產品生產導論	2	禽畜廢棄物管理實習	1	
					安全畜產品生產技術	2	牧場經營學	2	
					鹿學	2	生物資訊學概論	2	
					飼料製造技術	2	現代動物育種技術	2	
小計		3		3	免學	2	加工廠經營管理導論	2	14

註：1.本系學生至少應修滿 130 學分始得畢業(其中必修應修 81+1(通識教育講座)學分，選修應修 48 學分)

2.學生於畢業前需修習「通識教育講座」1學分課程。各系依序開課，開課學期不固定。

3.«外語實務»每學期皆開放修課，並須於畢業前依本校「外語實務課程實施要點」規定修畢。

動物科學與畜產系（產學攜手計畫專班）

Department of Animal Science

課程代號 Course Number	科目名稱(中 文) Course (Chinese)	學分 Credit	科目名稱(英 文) Course (English)	頁次 Page
專業必修科目 Required Courses				
142001	動物解剖生理學	3	Anatomy and Physiology of Livestock	
142002	動物解剖生理學實習	1	Laboratory of the Anatomy and Physiology in Livestock	
142003	動物舍規劃與自動化	2	Animal House Arrangement and Automation	
142004	牧場實務實習	2	Animal Farm Practice	
142005	生物化學	2	Biochemistry	
142006	生物化學實習	1	Biochemistry Lab.	
142007	動物遺傳學	2	Animal Genetics	
142008	肉品原料與利用	2	Raw material quality and utilization of meat	
142009	動物營養學	2	Animal Nutrition	
142010	乳、蛋品原料與利用	2	Raw material quality and utilization of milk and eggs	
142011	動物科學導論	2	Introduction to animal science	
142012	畜產微生物學	2	Microbiology of Animal Products	
142014	豬隻飼養管理	1	Pig Feeding and Management	
142015	豬隻飼養管理實習	1	Practice of Pig Feeding and Management	
142016	家禽飼養管理	1	Poultry Feeding and Management	
142017	家禽飼養管理實習	1	Practice of Poultry Feeding and Management	
142018	乳用家畜飼養管理	1	Dairy Livestock Feeding and Management	
142019	乳用家畜飼養管理實習	1	Practice of Feeding and Management in Dairy Livestock	
142020	動物育種學	2	Animal Breeding	
142021	禽畜保健	4	Livestock Health	
142022	禽畜保健實習	2	Practice of Livestock Health	
142023	經濟動物繁殖學	2	Reproductive of Farm Animal	
142024	專題討論	2	Seminar	

課程代號 Course Number	科目名稱(中 文) Course (Chinese)	學分 Credit	科目名稱(英 文) Course (English)	頁次 Page
專業選修科目 Elective Courses				
142025	有機化學	3	Organic Chemistry	
142026	有機化學實習	1	Organic Chemistry Lab.	
142028	畜產機械	2	Animal Production Machinery	
142029	畜產機械實習	1	Practice of Animal Production Machinery	
142030	動物內分泌學	2	Animal Endocrinology	
142031	細胞生物學	3	Cell Biology	
142033	經濟動物繁殖實作技術	1	Livestocks Reproductive Techniques	
142034	無特定病原實驗動物 飼養管理	2	Specific Pathogen Free Laboratory Animal Feeding and Management	
142035	無特定病原實驗動物 飼養管理實習	1	Specific Pathogen Free Laboratory Animal Feeding and Management Practice	
142036	實驗動物應用學	2	Application of Laboratory Animals	
142037	實驗動物應用學實習	1	Application of Laboratory Animals Practice	
142040	畜產生物多樣性	2	Biodiversity in Farm Animal	
142042	畜產品營養與健康	2	Nutrition and health of Animal	
142043	免疫學	3	Immunology	
142044	農業政策與法規	2	Agricultural Policy and Laws	
142045	馬學	2	Equine Science	
142046	馬學實習	1	Equine Science Practice	
142049	牧場經營學	2	Livestock Production Management	
142050	飼料製造技術	2	Feed Manufacture Technology	
142051	飼料製造技術實習	1	Feed Manufacture Technology Practice	
142052	飼料配方設計	2	Design of Feed Formulation	
142053	動物行為	2	Animal Behavior	
142054	禽畜環境生理學	2	Environmental Physiology of Domestic Animals	
142055	寵物飼養管理	2	Pet Feeding and Management	
142056	水禽飼養管理	2	Waterfowl Feeding and Management	
142057	鹿學	2	Deer Science	
142058	動物福利	2	Animal Welfare	
142059	禽畜廢棄物管理	2	Poultry and Livestock Waste Management	
142060	禽畜廢棄物管理實習	1	Poultry and Livestock Waste Management Practices	
142061	畜產檢驗與分析	2	Analysis of Animal Products	
142062	肉用草食家畜飼養管理	2	Meat-production Ruminant Farm Animal Feeding and Management	
142063	安全畜產品生產導論	2	Introduction to Safe Animal Production	
142064	安全畜產品生產技術	2	Techniques of Safe Animal Production	
142065	安全畜產品檢驗與品管	2	Safe Animal Products Analysis and Quality Control	

課程代號 Course Number	科目名稱(中 文) Course (Chinese)	學分 Credit	科目名稱(英 文) Course (English)	頁次 Page
專業選修科目 Elective Courses				
142066	畜產檢驗與分析實習	1	Animal Products Analysis Practice	
142067	肉品加工	2	Processing of Meat Products	
142068	肉品加工實習	1	Meat Products Lab Practice	
142069	乳品加工	2	Processing of Dairy Products	
142070	乳品加工實習	1	Dairy Processing Practice	
142071	蛋品加工	2	Processing of Egg Products	
142072	蛋品加工實習	1	Egg Products Lab Practice	
142073	加工廠經營管理導論	2	Introduction to Food Processing Plant Management	
142074	畜產品在美容之應用	2	Application of Animal Products on Beauty Industry	
142075	應用生物統計學	2	Applied biostatistics	
142076	禽畜副產物利用	2	Application of edible meat by-products	
142077	兔學	2	Rabbits Science	
142078	現代動物育種技術	2	Modern Animal Breeding Technology	
140279	生物資訊學概論	2	Introductory Bioinformatics	
140280	畜產企業實務實習	1	Practice of Livestock Enterprises	
142081	芻料作物及其調製	2	Tropica Forage Production and Utilization	

動物科學與畜產系 (產學攜手計畫專班)

Department of Animal Science

一、必修科目 Required Courses

142001 動物解剖生理學 3 必 余祺、劉世華，上
本課程以解剖學為基礎，依生理系統介紹禽畜之身體各部位構造與功能，依次分別為骨骼、肌肉、神經、血管循環、呼吸、消化、吸收、代謝、排泄、內分泌及生殖等系統。

142001 Anatomy and physiology of Livestock 3 R Y. D. Hsuuw, S

The object of this course will introduce animal anatomy and physiology with organ system. The lectures contain skeleton system, joints, muscles system, nerves system, cardiovascular system, respiratory system, digestion system, urinary system, endocrine system and reproductive system.

142002 動物解剖生理學實習 1 必 余祺、劉世華，上

本課程將利用標本及實際解剖生物來介紹身體構造，並在實驗室以顯微鏡、檢測試劑及多項小型手術用具，透過實驗操作來進一步了解血液、心臟、循環、呼吸、泌尿及生殖之生理現象。

142002 Laboratory of the Anatomy and Physiology in Livestock 1 R Y. D. Hsuuw, S

Students will learn animal anatomy with specimens and necropsy and will learn physiological function on blood cell, heart function, circulation, respiratory volume and reproductive cycle by microscopy and polygraph instruments.

142003 動物舍規劃與自動化 2 必 夏良宙，下

畜舍策畫與自動化分為基本策畫所需、材料與原理、各論三部份。基本需要是根據家畜之結構環境、社會環境和氣候環境之需要而訂定；其二為材料與原理，包含隔熱、保溫、風扇、牆、各類設備等材料；各論將就豬、牛、羊、雞舍設計上所需條件、欄數、自動化與飼養管理、飼料、餵飼等之配合加以討論。

142003 Animal House Arrangement and Automation 2 R L.C. Hsia, S

Animal house arrangement and automation will be divided into three parts: basic requirements, material and principle, and animal house for varied species. Basic requirement is concerned the following three environments: structure environment, social environment, and climate environment. Material and principle is discussed about the material used in animal house, and how to use the materials, i.e. insulation, heater, ventilation wall, division and etc. The house arrangement of four species of livestock and poultry will be discussed in detail. They are pig, poultry, cattle, goat, and sheep.

142004 牧場實務實習 2 必 牧場主任，上、下

本課程之目的在使學生在牧場實務實習中，將所學理論與實際配合，在操作中學習。課程內容包括，畜牧之現在及未來之展望、牧場工作簡介、養豬實習、蛋雞實習、肉雞實習、種雞實習、孵化實習、肉牛實習、乳牛實習、牧草管理、犬隻管理。

142004 Animal Farm Practice 2 R Head of Livestock Farm, F, S

The purpose of the course is to let students match the theory and practice, to reach the goal of

training-learning by doing. The following items are included future and past of animal production, introduction of animal farm, practice of swine production, practice of layer production, practice of broiler production, practice of feeder production, practice of hatchery production, practice of beef cattle production, practice of dairy cattle production, management of grassland, management of dogs.

142005 生物化學 2 必 食科系，上

本課程主要提供學生對於生物體內構成物質及其生物化學作用之基本認知，以作為修習營養學、遺傳學等之基礎。課程內容包括：1.生物體之構成物質—包括碳水化合物、蛋白質、脂質等之構造與代謝；2.生物能量之代謝；3.生化反應之催化及控制—酵素；4.遺傳訊息之傳遞—核酸。

142005 Biochemistry 2 R Dept. of Food Science,
F

This course offer students the basic concepts of Biochemistry for further studying in nutrition and genetics. The contents include : the structure and metabolism of carbohydrates, proteins and lipids; the metabolism of energy; biochemical reaction catalysis and regulations—enzymes; and genetic control—nucleic acids.

142006 生物化學實習 1 必 食科系，上

本課程主要配合生物化學正課提供學生對於生物化學相關實驗之基本操作。課程內容包括：PH 值之測定法、緩衝溶液之製備、氨基酸之滴定曲線；2. 蛋白質一般反應、氨基酸與蛋白質之定性分析、蛋白質之定量分析；3. 醣類之定性分析與定量分析。

142006 Biochemistry Lab 1 R Dept. of Food Science,
F

This course is to offer students about the basic practice of biochemistry. The contents of the basic practice were to include : 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 qualitative and quantitative determination of carbohydrates.

142007 動物遺傳學 2 必 張秀鑾，下

本課程旨在介紹遺傳學基本原理與解說生物體之遺傳特徵在世代間如何傳遞、遺傳密碼如何複製與表現，及其變異原因。課程內容包括古典孟德爾遺傳學、基因表現與交感、連鎖與性聯遺傳、遺傳之染色體學說、DNA 之遺傳功能、複製、重組、轉錄與轉譯；最後簡介突變與核外遺傳對家畜之影響。

142007 Animal Genetics 2 R H. L. Chang, S

The objectives of this course are to introduce the principles of genetics and to state how the genetic characteristics being transmitted between generations, how the genetic code being replicated and expressed, and the causes of variation. It covers major topics usually taught in an introductory course, including classical Mendelian genetics, gene expression and interaction, linkage and sex linked inheritance, chromosome theory of inheritance, genetic function of DNA, replication, recombination, transcription and translation. In addition, both mutation and extranuclear inheritance are to be briefly introduced but not covered in detail.

142008 肉品原料與利用 2 必 陳志銘

本課程介紹畜產品原料的種類與特性，使學生對乳、肉、蛋及禽肉與副產物的特性有概括認識，並可提供往後研習肉品、乳品與蛋品加工之參考。主要內容包括各種畜產食品原料之構造、特性、組成營養價值、影響產品原料之因素以及原料之貯存與處理等

142008 Raw material quality and utilization of meat 2 R C.M.Chen

This course will discuss the types and characteristics of animal product materials, in order to give students a basic insight into the materials of meat, milk, egg, and poultry meat and their

by-products, and for the further study of meat, dairy and egg processing technique. The major contents conclude structure, characteristics, and composition of materials, functional properties of raw materials of animal products quality influencing factors, storage and handling of materials, and etc.

142009 動物營養學 2 必 謝豪晃，下

本課程主要討論動物營養學的原理，包括：營養學的發展、動物營養消化生理、飼料的營養組成分、消化率測定、營養需要量測定、營養素的代謝利用過程，包括碳水化合物、脂質、蛋白質、礦物質、維生素及水之代謝；最後並討論營養性疾病及營養知識的應用。

142009 Animal Nutrition 2 R H. H. Hsieh, S

This course will discuss the principle and application of animal nutrition. The contents include : the development of nutrition, digestive physiology, the composition of feed, the measurement of digestibility, the metabolism of nutrients ; carbohydrates, fats, proteins, minerals, vitamins and water ; nutritional deficiency and application of nutritional knowledge.

142010 乳、蛋品原料與利用 2 必 林美貞 下

本課程介紹畜產品加工利用的方式與種類，使學生對乳、蛋與副產物利用有概括認識，並可提供往後研習乳品與蛋品加工之參考。主要內容包括各種畜產食品之原料特性、加工原理、以及加工步驟等。

142010 Raw material quality and utilization of Milk and Eggs 2 R M. J. Lin,

This course will discuss the methods and type of animal products utility, in order to give students a basic insight into the meat, milk, egg, and poultry meat and their by-products utilization, and for the further study of meat processing and egg processing technique. The major content concludes animal food on structure and composition, functional properties of raw material of animal products, processing principles and procedures.

142011 動物科學導論 2 必

本課程主要引領學生對「動物科學與畜產系」之學習領域與相關科學有一初步認識，以作為衡量自己未來方向之基礎。內容包含畜產之內涵、範圍、創新技術與未來發展，並引導學生認識本系教育目標、研究方向和主題，認識學校實習畜牧場和技藝訓練中心畜牧組之訓練工作目標及運作方式，引領學生利用圖書館以及網際網路等資源探索「動物科學與畜產」領域之知識，以循序漸進方式培養學生對「動物科學與畜產」之興趣與志向。

142011 Introduction To Animal Science 2 R

This course is to introduce "animal science" to students. It covers the following subjects: (1) introduction Department of Animal science, (2) overview of animal science, (3) the evolution of livestock farming systems, (4) our relationship with domestic animals is a symbiosis, (5) animal behavior and farm animal management, (6) environmental factors for animals, (7) product identification and traceability in farm animal, (8) manure and wastewater treatment, (9) organic biological farming and livestock, (10) environmental hormones, (11) functional foods and extracting bioactive compounds from animal products, (12) biotechnology in animal nutrition, physiology and health.

142012 畜產微生物學 2 必 林美貞

本課程講授微生物之特性及分類、原核細胞之結構、細菌之分類及鑑定、真核細胞之結構、真菌、原生生物及寄生蟲、病毒之分類及鑑定、微生物之生長、微生物之營養與代謝、微生物之控制及於基因工程之應用。並針對畜產相關之微生物加以探討，包括畜產品原料中微生物之性質和殺菌條件、原料之貯存技術、發酵微生物之加工特性及成品之微生物變敗。

142012 Microbiology of Animal Products 2 R M. J. Lin

This course includes characteristics and classification of microorganisms, structure of prokaryotes, classification and identification of bacteria, structure of eukaryotes, fungi, protists, parasites, classification and identification of virus, growth, nutrition and metabolism of microorganisms, microbial control, and genetic engineering. The course will focus on the microbiology related to animal production, including microbial control of animal products, properties and destruction of microorganism in animal products, storing technique of raw materials, processing characters of fermented culture, and microbial spoilage final products.

142014 豬隻飼養管理 1 必 夏良宙，上

本課程目的在於介紹台灣高溫多濕的環境下，養豬事業之成就與豐富之經驗以及國內外養豬業之先進技術與科學知識。其內容包括豬隻生理解剖、遺傳育種、品種選拔與改良、生物技術與生殖、營養與飼料、飼養管理、環境與污染控制、經濟經營規模與市場產銷等知識，再配合實際操作，使學生參與養豬現場之訓練，以期成為務實之經營者。

142014 Pig Feeding and Management 1 R L.C. Hsia, F

The purpose of this course is to introduce a technical basis and rich experience for successful production of swine industry under the high temperature and high moisture environments in Taiwan, and to provide the current new knowledge and technology of the world's swine science. The contents of this course advance in swine: physiology and anatomy, genetics and breeding, breeds selection and improvement, biotechnology and reproduction, feeds and nutrition, feeding and management, environment and waste control, economic size and marketing and so on. The practical training on-farm can be enhanced in this course.

142015 豬隻飼養管理實習 1 必 夏良宙，上

實習內容在使學生實際從事養豬技術、規劃及經營之訓練，以造就成為真正養豬經營之專業人才，諸如品種與選種評分、豬場清洗與消毒、分娩介助、發情觀察與配種、豬場紀錄規劃、豬舍建築設計與豬舍配置規劃、飼料需求量估計、飼養成本之概估、經濟經營規模擬定、投資報酬之分析、市場供需資料之搜集及總生產成本與收益之計算與分析。

142015 Practice of Pig Feeding and Management 1 R L. C. Hsia, F

The contents of swine productive practice are to provide a training of students on technique, planning and management of swine production. It contains: swine breeding and selection, washing and sanitation of pig house, farrowing nurse, estrus observation and service, productive record, design and scaling of growing-finishing house and farrowing house, requirements of feeds, feeding cost, the decision of economic size, the analysis of investment and margin, collecting the information of the supply and demand on market, calculation and analysis of the total cost of production and total revenue.

142016 家禽飼養管理 1 必 謝豪晃，上

本課程介紹家禽飼養管理之理論與實務作業技術，包括：家禽品種，種蛋經營，孵化作業，育雛及一般飼養管理，雞舍與設備操作，疾病防治與產品屠宰、包裝及銷售等事務，使學生對家禽產業之整合，生產現況與未來發展有全盤之認識。

142016 Poultry Feeding and Management 1 R H. H. Hsieh, F

The objective of this course is to introduce the theory and practical operation technique of poultry to the students. The contents include : breeds and students of poultry, management of breeders, hatching operation, brooding and rearing, houses and equipment operation, disease control, processing and marketing products .

142017 家禽飼養管理實習 1 必 謝豪晃，上

本課程實習內容主要配合「家禽飼養管理」課程，使學生實際進行生產過程所需要之操作訓練，包括：種蛋之處理、孵化技術、飼養試驗、配合課程之需要邀請現場人員作專題研討、並參觀實習，包括：自動化飼養系統、屠宰作業、雞蛋洗選包裝等，使學生充分瞭解家禽生產之作業技術。

142017 Practice of Poultry Feeding and Management 1 R H. H. Hsieh, F

This practice course is associated with the poultry productive technique to enforce the students on the skill and technique part through field practice. Learning by doing is the basic concept of technique education. In this course students are allocated into groups to operate the whole process for poultry production, include: hatching eggs operations, hatchery technique and feeding trials. In addition there will be seminars and direct discussion with industry people, field trip to commercial farm processing plant, etc, Through this practice course students will get a comprehensive knowledge of poultry production.

142018 乳用家畜飼養管理 1 必 沈朋志等，上

本課程主要著重於熱帶地區高溫多濕環境下乳用家畜飼養管理之理論與實務，對於擠乳管理、電腦管理系統，完全混合日糧飼養系統，畜舍降溫裝置，最新反芻營養科技資料以及乳用家畜較常發生之疾病與其防治加以闡述，以訓練學生對於經營農場更具信心。

142018 Dairy Livestock Feeding and Management 1 R P. C. Shen, et al., F

This course lays special emphasis on the feeding and management of dairy livestock in the high temperature and humid environment. This includes milking management, computer management system, TMR feeding system, house cooling equipment, recent ruminant nutrition knowledge, disease and control of dairy cows, this will give the students more confidence in running the dairy farm.

142019 乳用家畜飼養管理實習 1 必 沈朋志、
劉世賢，上

本課程之內容旨在讓學生熟悉乳用家畜管理技術，例如人工授精與妊娠診斷，公牛精液選擇，擠奶機功能檢測，血液檢查，粗料乾物質快速測定；營養代謝性疾病之認識與檢測；並鼓勵學生多與民間乳牛場接觸，以發掘現存之問題與設法解決達到理論與實際之配合。

142019 Practice of Feeding and Management in Dairy Livestock 1 R P. C. Shen,
S. S. Liu, F

The purpose of this course is to give the students more familiar with the management tool of dairy livestock. This includes artificial insemination and pregnancy diagnosis, bull frozen semen selection, milking machine function testing, blood test of dairy cow, rapid testing of roughage dry matter contents, nutritional metabolic disorders. The students were encouraged to visit private dairy farm so that they could learn more problems and try to find solutions.

142020 動物育種學 2 必 張秀鑾，上

本課程之目的在解析家畜育種學原理，並介紹各種育種技術於家畜改良計畫之應用。課程內容包括族群基因頻率、簡單與多基因遺傳性狀、選拔原理與應用、配種制度、數量性狀之遺傳模式、遺傳參數估計與應用、生物技術發展與家畜育種之應用。

142020 Animal Breeding 2 R H. L. Chang, F

The objectives of this course are to provide an understanding of the principles of animal breeding and to introduce the application of animal breeding techniques in farm animal improvement programs. Material includes gene frequencies in populations, simple-inherited and polygenic traits, selection, mating systems, genetic models for quantitative traits, estimation and application of genetic parameters, development of biotechnology and its application in animal breeding.

142021 禽畜保健 4 必 獸醫系，上下
本課程目的在使學生瞭解重要禽畜疾病之理論與實際及簡單外科手術。其中包括有關傳染性、內科性及繁殖性疾病之控制、消毒及預防措施，並同時教導學生有關外傷性之簡單外科處理技術。期能使學生瞭解疾病之發生、處理及預防方法。

142021 Livestock Health 4 R Dept. of Veterinary,
F, S

This course will introduce students the theory of important domestic animal diseases and simple surgical techniques. It provides students general knowledge of disease control; aseptic procedure; and prevention of infectious diseases, internal diseases and reproductive disorder. It also teaches students basic surgical techniques for wounds care. Students are expected to understand the knowledge of diseases occurrence, and the methods of medical treatment and disease prevention.

142022 禽畜保健實習 2 必 獸醫系，上下

本課程配合正課，著重於疾病診斷與預防，主要在提供學生對於禽畜傳染性、內科性及繁殖障礙性疾病之控制、消毒及預防等基本概念與操作，並教導簡單之外科縫合技術。期能使學生瞭解疾病之處理及預防之實際處理方式。

142022 Practice of Livestock Health 2 R Dept. of Veterinary,
F, S

This course introduces the method of diseases diagnosis and prevention. It provides the basic concepts and operative practices in diseases control; aseptic procedure; and prevention in animal infection diseases, internal diseases and reproductive disorder. It also teaches students basic and practical surgical techniques.

142023 經濟動物繁殖學 2 必 沈朋志、
劉世賢，上

本課程著重於討論禽畜繁殖問題及新近發展之繁殖技術，包括雌雄種畜生殖機能之評估與改善，繁殖管理之新觀念與方法，生殖性狀之選拔，人工授精與體外授精技術之應用，性別選擇，配子和胚之顯微操作及保存，與胚移置技術等，並以有助於解除緊迫環境下禽畜之繁殖困擾者為優先。修習本課程之學生可藉課堂討論與國內外相關文獻之閱讀以掌握繁殖技術之最新發展，提升改善禽畜繁殖效率之能力。

142023 Reproductive of Farm Animal 2 R P. C. Shen,
S. S. Liu, F

The objective of this course is to give the students more confidence in their abilities for improving the reproductive efficiency of the livestock. Dealing with the modern concepts and the recent techniques in livestock reproduction, it consists of the following subjects: evaluation and improving of the reproductive functions of the breeding livestock; reproductive management; selection on the reproductive characteristics; methods of sex selection; applications of artificial insemination and in vitro fertilization; micromanipulation and preservation of the gametes and embryos; the technique of embryo transfer; and so on. The topics being put in the priority are those techniques that are capable of being used for restoring the prevalent reproductive failure of the livestock under the environmental stress. For catching up the new developing concepts and techniques, students are required to read and discuss the publication in livestock reproduction.

142024 專題討論 2 必 全系老師，上下

本課程旨訓練研究生對於與畜產科學或論文有關的題目，經由資料之收集、研讀與彙整，令學生從而習得相關之專業知識，並由之獲得資料之分析、歸納與邏輯思考、試驗設計與統計、數據分析與統整之能力。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。

142024 Seminar 2 R Faculties, F, S

The purpose of this course is to give graduate students the trainings on searching information, reviewing references related to animal science or their research topics, therefore, the abilities on logical thinking, experimental design, data collection and analysis, results discussion. Students are required to select a topic in the field of animal science or that related to their thesis. Students must give oral presentation and dissertation.

二、選修科目 Selective Courses

142025 有機化學 **3 選** **環工系，下**

本課程乃注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、酮、酸、酯及胺）之官能基反應，各類之合成方法，相互間之關係以及其實際之應用。

142025 Organic Chemistry **3 S** **Dept. of Environmental Engineering and Science, S**

A systematic study of the reaction in each functional group in the important classes of carbon compounds (alkane, alcohol, ether, organic halides, aromatic compounds, aldehyde, ketone, carboxylic acids, ester and amine) the methods of the synthesis of each compound, the relationship and it's uses in each compound.

142026 有機化學實習 **1 選** **環工系，下**

本課程係為非提供主修有機化學之學生而開設，其促使學生得以熟悉一般有機化學之實驗技術，並從實驗中增加對教材之瞭解。本實驗除授以物理常之測定外，並依各官能基之不同之化合物逐一實驗：烷、炔、苯、有機鹵化物、醇、醚、酮、羧酸衍生物及胺等，每一實驗之重點是不同之官能基所產生的不同化學反應的試驗。

142026 Organic Chemistry Lab. **1 S** **Dept. of Environmental Engineering and Science, S**

This course is designed in conjunction with the lecture of organic chemistry for the students that are not major in organic chemistry. It intends to provide students a profound understanding of subject, matter from laboratory work and familiar with basic laboratory technique. In addition to the measurements of physical constants, the course is carried out in a functional approach: alkanes, alkenes, alkynes, benzenes, organic halides, alcohols, ethers, aldehydes, ketones, carboxylic acids and the derivatives of carboxylic acid, amines. Each experiment will emphasize on the common chemical properties ascribed to functional groups.

142028 畜產機械 **2 選** **生物系統工程系，上**

本課程之目的為介紹畜產機械之種類構造原理利用與維護，其內容包括緒論、機械原理、牧草地之造成機械、畜舍建築及管理利用機械、放牧利用之設施與機械、畜產品加工利用與機械及畜舍廢棄物處理與利用機械等。

142028 Animal Production Machinery **2 S** **Dept. of Biosystem Engineering, F**

The subject of this course contains structure utilization and maintenance of animal husbandry machinery. Main topics include introduction, theory of machines, reclamation machinery for pasture, animal house management machines, pasture machines and installations, equipment for animal products, and equipment for livestock wastes.

142029 畜產機械實習 **1 選** **生物系統工程系，上**

本課程為配合正課實際需要，其重點為注重操作管理及維護保養以達到理論與實際技術相配合，其內容包括汽柴油引擎之維護保養與實習、曳引機駕駛維護保養與實習、牧草機操

作機械保養與實習、畜舍建築及利用機械操作實習、自動給飼機械之操作及保養實習、畜產品加工利用機械實習及畜舍廢棄物處理及利用機械操作保養實習。

142029 Practice of Animal Production Machinery **1 S** **Dept. of Engineering, F**

This practice course provides essential technology training for students to operate, and maintenance for animal husbandry machinery. Main topics include training to skill of operate and maintenance for diesel engine, training to skill of operate and maintenance for tractor, forage harvesting operate and maintenance, animal house management machines, automatic feeding machine, equipment for animal products, and equipment for livestock waste.

142030 動物內分泌學 **2 選** **余祺，上**

本課程主要講授家畜內分泌腺（組織）所分泌的激素種類、調節作用機轉、下視丘和腦下腺間之相互調控，及各激素的生理機能，本課程將有助於學生對激素整體了解，以培養更深入研究內分泌之能力。

142030 Animal Endocrinology **2 S** **C. Yu, F**

This course is designed for study the classes of hormones, the mechanisms of hormone action, the control of hypothalamic-hypophyseal hormone and the physiological roles of the endocrine glands (tissues) in domestic animal. After complete this course, students can understand the hormone functions and can learn advance topic easily.

142031 細胞生物學 **3 選** **余祺，下**

本課程講授細胞結構、生理與功能、細胞膜運輸、信息傳導、細胞能量轉換、細胞核、細胞週期、基因重組、轉錄、轉譯、基因表現調節等，使學生瞭解細胞的生命現象，奠定學生對動物科學之認知。

142031 Cell Biology **3 S** **C. Yu, S**

The basic structure, physiology and function of the cell, membrane transport, signal transduction, energy flow in cells, cell cycle, genetic recombination, transcription, translation, gene expression are discussed in this course. It makes the students aware the basic animal science.

142033 經濟動物繁殖實作技術 **1 選** **沈朋志、劉世賢，上**

本實習之目的在配合「禽畜繁殖技術」課程進度，使學生藉由人為之控制提高禽畜繁殖效率，並育成合乎人類所需之經濟動物。課程內容設計以禽畜類別為單位，分別探討其繁殖生理特性、繁殖方法與繁殖管理、人為控制之發情與排卵、人工授精、懷孕診斷、分娩控制、胚移置及縮短世代間距之各種方法。

142033 Livestock Reproductive Techniques **1 S** **P. C. Shen, S. S. Liu, F**

Objectives of this course are: 1) increasing reproductive efficiency by artificial control, 2) cropping desired economic animal. Class is arranged by animal species. Topics include the characteristics of reproductive physiology and management, artificial control of estrus, ovulation, and insemination, pregnancy diagnosis, control of parturition, reducing calving interval and embryo transfer.

142034 無特定病原實驗動物飼養管理 **2 選** **沈朋志等，上**

本課程主要介紹應用於農學及生物醫學之實驗動物的飼養管理及其動物學之基礎特性，以作為研究、治療及實驗之模式系統。課程內容包括實驗動物種類與命名及育種、實驗動物管理標準操作程序；實驗動物飼養環境與設施；實驗動物營養與飼養管理；實驗動物網路資源；實驗動物品質管制；以及實驗動物疾病與人畜共通傳染病等，涵蓋之實驗動物有小

鼠、大鼠、倉鼠、天竺鼠、家兔、犬及家畜等，以有助於瞭解實驗動物在農學及生物醫學等領域之科技研發上所扮演之角色與特性。

142034 Specific Pathogen Free LaboratoryP 2 S C. Shen et al F
Animal Feeding and Management

This course provides a concept and introduction to the feeding and management of laboratory animals applied in the research of agriculture and biomedical medicine. It includes the standard operative procedures, environmental control, nutrition and feeding, network resources for laboratory animals, quality control, important zoonosis and health control.

142035 無特定病原實驗動物飼養管理實習 1 選 沈朋志等，上

本課程主要介紹應用於農學及生物醫學之實驗動物的飼養管理方法及其實務操作，以作為研究、治療及實驗之模式系統。課程內容包括實驗動物之動物識別與記錄；實驗動物國際認證及標準操作程序編寫；實驗動物之大體解剖操作與生理構造；動情週期及配種觀察；實驗動物之保定、採血、注射與麻醉；實驗動物之健康診斷與治療等，涵蓋之實驗動物有小鼠、大鼠、倉鼠、天竺鼠、家兔、犬及家畜等，以有助於學生習得各種實驗動物之飼養管理技術。

142035 Specific Pathogen Free Laboratory Animal Feeding and Management Practice 1 S P. C. Shen et al.,

This practical course emphasizes on the technical training about identification, record, recognizance and SOP of the laboratory animals, gross anatomy and physiological function, reproductive cycles and breeding observation, holding, bleeding, injection and anesthesia, health monitoring and simple practice in disease diagnosis and exclusion.

142036 實驗動物應用學 2 選 劉世賢等，下

本課程以實驗動物在各重要領域之應用之講授主體,授課內容由法規及管理以及應用概論入手,進而至醫學、健康食品檢測、臨床前安全及功能評估、疫苗工業以及在生殖科技等之應用進行講授。期能使學生瞭解實驗動物在各領域應用相關資訊,進而提昇未來投入實驗動物相關行業興趣。

142036 Application of Laboratory 2 S S. S. Liu et.al., S
Animals

This course is major in the practice and visiting of application of Laboratory animals in different field. The content includes the application in the medicine, the monitor of health foods, the estimate of security and function before clinical treatment, vaccine industry and reproductive biotechnology, etc. From those practice and visiting will let students understand that the relevant information in different fields are used, and then promote and invest the relevant trade interest of Laboratory animals in the future.gene expression and mutation.

142037 實驗動物應用學實習 1 選 劉世賢等，下

本課程以實驗動物在各重要領域之應用之實習及實地參訪為主體,授課內容包括醫學、健康食品檢測、臨床前安全及功能評估、疫苗工業以及在生殖科技等之應用進行實習與實地參訪行程。期能使學生瞭解實驗動物在各領域應用相關資訊,進而提昇未來投入實驗動物相關行業興趣。

142037 Application of Laboratory 1 S S. S. Liu et.al., S
Animals Practice.

This course is major in the practice and visiting of application of Laboratory animals in different field. The content includes the application in the medicine, the monitor of health foods, the estimate of security and function before clinical treatment, vaccine industry and reproductive biotechnology, etc. From those practice and visiting will let students understand that the relevant

information in different fields are used, and then promote and invest the relevant trade interest of Laboratory animals in the future.gene expression and mutation.

142040 畜產生物多樣性 2 選 張秀鑾，上

本課程旨在介紹生物多樣性維護之理論基礎、種原基因保存、管理與應用機制，以達到動物遺傳資源永續利用之目的。課程內容包括台灣畜產資源簡介、畜產動物活體與離體保存法、國內外畜產遺傳資源交流國外機制、國際條約與國內相關法規等。

142040 Biodiversity in Farm Animal 2 S H. L. Chang, F

The objectives of this course are to state the fundamental theory of biodiversity maintenance, germplasm preservation, management and application mechanism for sustainable utilization of farm animal. Material includes an introduction of Taiwan farm animal genetic resources, both in- and ex-situ conservation protocols, and exchange mechanism of genetic resources for local and global usages, as well as acts, rules and regulations applied to nation and international purpose.

142042 畜產品營養與健康 2 選 陳志銘 上

畜產品包括乳品、肉品、蛋品是人類優良的食物來源之一，尤其是人類的主要蛋白質來源，對人類健康有舉足輕重的影響。本課程主要介紹乳品、肉品、蛋品之主要營養成分：水分、蛋白質、脂肪、維他命、礦物質及其他微量元素，還包括部分重要機能性成分；並進一步說明這些營養素對人體健康的優點、貢獻及影響；尤其是其機能性保健成份對人體健康與保健的效果及加工時應注意事項。其次，也會探討攝食畜產品的正確觀念，使大眾可以健康、安心地享受美食。

142042 Nutrition and Health of Animal 2 S

Animal products, including milk, meat and egg products, are one of the major excellent food sources, especially, those are major protein resources of human being, and are quite important for human health. This course mainly introduces the major components, including moisture, proteins, fats, vitamins, minerals and other microingredients, milk, meat and egg, as well some vital functional ingredients of them. Furthermore, it also illustrates the merits, contribution and effects of those nutrients for human health. Especially, it focuses the human health and functional efficiency of those functional ingredients and the matters needing attention during the processing procedures. The next, this course investigates the correct concept to intake animal products, and make the people can feeling at ease to enjoy the feats in healthy way.

142043 免疫學 3 選 莊秀琪、鍾文彬，下

本課程主要提供非獸醫學生學習一般的免疫學概論，將介紹免疫系統之作用，包括免疫細胞的種類與生成機制，介紹抗原、半抗原與抗體之定義與應用，免疫系統之基本運作機制，免疫球蛋白之種類與結構，免疫細胞之功能以及免疫化學相關之應用。

142043 Immunology 3 S H. C. Chaung, W. B. Chung, S

General concepts on Immunology will be introduced in this course, including different types of immune cells and their synthesis, definitions of antigens, haptens and antibodies and their applications, the basic mechanisms in regulating immune responses, types of immunoglobulins and their structures, the functions of different immune cells and the applications of immunochemistry.

142044 農業政策與法規 2 選 張秀鑾等，上

本課程旨在介紹農業政策的意義、內容與相關法規，培養學生具備農業動物資源政策分析

與接用相關法規之能力。課程內容包括農業政策、畜牧法規與施行細則、農業資源管理、畜產品生產與廢棄物資源化等有關法令，藉以充實法律常識、培育動物科技人員兼具專業與法律素養。

142044 Agricultural Policy and Laws 2 S H. L. Chang et al., F

The objective of this course is to introduce the concept and contents of agricultural policy, laws and regulations related to animal industry, and thus provide students with the ability of invoking an article of law or regulations. Material includes current agricultural policy, animal industry act and the enforcement rules, rules or regulations for management of agricultural resources, and for animal production as well as for waste treatment law with promoting in both reducing waste and recycling resources.

142045 馬學 2 選 未定，下

本課程係討論馬的飼養及管理有關的各項問題，內容包括有養馬事業的歷史與發展、馬的鑑別與選拔、品種與類型、營養與飼料、日常照料、行為與調教、馬廄管理、馬的放牧及衛生管理。

142045 Equine Science 2 S ,S

The course will deal with the feeding and management of horse. It will cover the history and development of the horses industry, selecting and judging horses, breeds and types of horses, nutrition and feeds for horses, feeding and management, horse behavior and training, pasture for horses, and horses health, disease prevention, and parasite control.

142046 馬學實習 1 選 未定，下

本實習課程旨在探討馬的習性、飼養管理及御馬，並使學生習得馬飼養、清潔、修蹄、騎乘之基本技能。主要課程內容包括：馬的習性、馬舍管理、馬之調教清潔、馬蹄保護及騎乘。

142046 Equine Science Practice. 1 S ,S

The purpose of this course is to give students more familiar with horse behavior, management, horse training, and horse driving. It contains: horse behavior and training, care and management, herd health, hoof care, and the skill of horses riding.

142049 牧場經營學 2 選 未定，下

使學生瞭解經營牧場之一般原則、原理與如何應用經濟原則及牧場經營有關業務期降低經營成本，提高利益，其內容包括牧場生產資源之利用、牧場經營之經濟原則、禽畜生產預估、畜產品運銷、生產業務之配合利用、牧場建築與設備、環境污染控制、以及自動化生產的方式評估。

142049 Livestock Production Management 2 S ,S

To allow students to understand the general principles of managing animal production, and to know to apply the economic theories into the animal production with a view to decreasing production costs and increasing profits. This course is dealing with the utilization of animal production resources, the estimating of animal production, the marketing of animal products, the coordination of production business, the farm building and equipment and the control of environmental pollution.

142050 飼料製造技術 2 選 謝豪晃，上

本課程乃教授禽畜及魚類完全配合飼料製造工業之現代技術，內容包括：單味飼料之生產方式與一般生產過程之影響因素、飼料預混劑之製造技術、配合飼料之製造包括設計、收料、混合、製粒、包裝儲存與糖蜜、油脂等液體原料添加之有關技術、養魚飼料之製造技

術等。

142050 Feed Manufacture Technology 2 S H. H. Hsieh, F

The objective of this course is to acquaint the students with the modern technique about the formula feed industry of the livestock, poultry and fish. The course contains the processing of the ingredient feed and the influent factors about general processing problems; processing and adding of feed premix; the engineering of formula feed, including design, receiving, grinding, mixing, pelleting, bagging, weighing, loading and the technique of addition of liquid ingredients; and the technique of manufacturing of the fish formula feeds.

142051 飼料製造技術實習 1 選 謝豪晃，上

配合『飼料製造技術』課程之講授內容，作實地之見習與操作，藉予提高該課程之教學效果，內容包括：單味原料製造方法之見習、參觀各單味原料工廠，比較不同生產方法之結果、配合飼料工廠製造技術見習及操作。

142051 Feed Manufacture Technology Practice. 1 S H. H. Hsieh, F

In conjunction with the lectures of the course of feed manufacturing technology, students are provided with the opportunity for the exercise and practical operation of the feed manufacturing technology, to enhance the effects of this course. The exercise of the feed manufacturing technology covers observation the processing of the various feed ingredients, visit feed plants to compare the results of different processes of feed ingredient, and explanation and operation of the process on the formula feed manufacturing.

142052 飼料配方設計 2 選 謝豪晃，下

本課程係傳授各種禽畜飼料添加物及飼料配方之最新設計技術，其內容包括：飼料添加物之種類、特性及用途、飼料配方之設計原理與設計方法、養豬飼料配方之設計、養雞飼料配方之設計、反芻動物飼料配方之設計、其他飼料配方之設計。

142052 Design of Feed Formulation 2 S H. H. Hsieh, S

The object of this course is to acquaint the students with feed additives and the modern design technique of feed formulation for the livestock and poultry. The contents of this course are the kind and using of the feed additives, principle and method of designing feed formulations, design of swine feed formulation, design of poultry feed formulation, design of ruminants feed formulation, and design of the other animal feed formulation.

142053 動物行為 2 選 夏良宙，上

本課程在使學生瞭解動物行為學之一般原理，課程內容包括：什麼是行為、適應性行為、簡單行為、生物節奏與時鐘、訊號刺激、行為的基因基礎、生理準備、學習、銘印、遷移、社會行為、溝通、統治階級、領域、性行為、轉移動作及社會生物學等。

142053 Animal Behavior 2 S L. C. Hsia, F

This course is an introduction to the study of general concepts of animal behavior. It is offered to cover topics such as what is behavior?; behavior as adaptation; simple behavior; biological rhythms; sign stimuli; the genetic; physiological readiness; learning; imprinting; migration; social behavior; communication; dominance; territoriality; sexual behavior; displacement activity; and sociobiology.

142054 禽畜環境生理學 2 選 謝豪晃，上

本課程主要討論環境因素、氣候條件以及動物的各種生理控制機構；進而探討環境對動物所造成的影響，以及克服的方法；從動物行為、飼養管理以及畜舍設計等方面來提高畜牧生產的效率。台灣地處亞熱帶，每年長達6~7個月的時間處在高溫高濕的緊迫環境，如何

克服環境緊迫所造成的不良影響，提高畜牧生產，實為一重要課題。

142054 Environmental Physiology of Domestic Animals. 2 S H. H. Hsieh, F

This course will discuss the environmental factors, climatic conditions and physiological mechanisms of domestic animals, and further investigate the effects of environments on the performance of animals. The important object of this course is to evaluate some methods to overcome the animal production problems due to the warm humid environments in Taiwan.

142055 寵物飼養管理 2 選 余祺，下

本課程之授課內容包括：寵物種類來源、品種、繁殖與育種、營養、飼養與管理、畜舍和保定，以及保健。本課程所提供飼養寵物之相關常識，將有助於寵物飼養技術之提升。

142055 Pet Feeding and Management 2 S C. Yu, S

The purpose of this course provides the necessary information including origins, breeds, reproduction and breeding, nutrition, feeding and management, housing and handling, health care in pet animals. It is hoped that this study will serve as a guide for advanced in the field of pet feeding.

142056 水禽飼養管理 2 選 未定，下

本課程在使學生瞭解水禽的飼養管理，課程內容包括：水禽簡介、鴨及鵝的特性與習性、水禽的品種、鴨及鵝的捕捉與固定法、種禽的選擇與配種、鴨及鵝的雌雄鑑別法、種用水禽的房舍、飼養及管理、種蛋的管理及保存、鴨蛋及鵝蛋的孵化法、肉用鴨、鵝的生產，水禽產品的處理。

142056 Waterfowl Feeding and Management 2 S ,S

An advanced study of waterfowl production that includes introduction to waterfowl, their peculiarities and habits, breeds, handling and holding of waterfowl, selection of breeders and management of the breeds, caring and holding of hatching eggs, incubation of duck and geese egg, production of market ducks and geese, the processing of waterfowl etc.

142057 鹿學 2 選 劉炳燦，上

本課程之討論範圍包括鹿的生物學及台灣現有鹿種之特性，營養與飼養，管理與設備，繁殖管理，疾病防治與產品利用，鹿舍規劃與市場經營，並特別強調在台灣之特殊環境下，如何經由學理與技術之應用，以調適經營及管理方法，提昇生產效率。

142057 Deer Science 2 S B. T. Liu, F

The objective of this course is to give the students more confidence in their abilities for producing domestic deer, managing and improving deer industry. Dealing with the modern concepts in deer science, it comprises the following subjects: biology of the cervides; major breeds of the native cervides and their characteristics; principles of cervides genetics, nutrition, feeds and feeding; herd and reproductive managements; deer farm planning; disease control; preparation and marketing of the deer products, and so on. The topics being put in the priority are those factors and techniques that are capable of being used for improving the efficiency of deer production under the native conditions.

142058 動物福利 2 選 夏良宙，下

本課程之目的在使學生能深刻瞭解動物福利，以為從事畜牧生產之基礎。課程內容包括：動物福利定義、緊迫對動物的影響、動物福利和產業之關係、各種家畜禽動物之福利。

142058 Animal Welfare 2 S L. C. Hsia, S

The arrangement of this course is to let the students understand the knowledge about animal

welfare. The following topics included in the course: definition of animal welfare, the influence of stress on farm animals, animal welfare, animal welfare and industry, and specific topic of animal welfare on different farm animals.

142059 禽畜廢棄物管理 2 選 未定，下

本課程旨在協助學生熟悉畜牧廢棄物之特性，一般廢棄物處理技術與原理，三段式廢水處理場之設計及各種禽畜污染防治技術，堆肥原理與製作，脫臭原理與技術，污染之減量及處理，以達到環保法規之要求標準，方能永續發展。

142059 Poultry and Livestock Waste Management 2 S , S

The purpose of this course is to assist the students to understand the characteristics of animal waste, the general principles and techniques of treatment, the design of wastewater treatment plant, composting treatment, odor control and sludge minimization in order to achieve the EPA required standards.

142060 禽畜廢棄物管理實習 1 選 未定，下

本課程旨在協助學生熟悉畜牧廢水或排放水之一般分析，其中包括實驗室之安全注意事項，品保與品管，廢水之取樣與保存，QC，COD、BOD、TS、SS、VSS、N、P、PH，杯皿試驗，導電度，透視度與沈降性試驗與堆肥腐熟度與有機質分析。

142060 Poultry and Livestock Waste Management Practices 1 S , S

The purpose of this Course to is assist the students to understand the analysis and sampling procedure of wastewater and discharge water including the QA and QC of laboratory, COD, BOD, TS, SS, VSS, N, P, PH, jar test, conductivity, transparency test and SV₃₀ test, compost maturity and organic matter analysis.

142061 畜產檢驗與分析 2 選 林美貞、上

本課程之設計主要在介紹正確的分析方法，儀器的正確使用，以減少分析結果之誤差，配合畜產品之品質檢查方法及配合畜產品製造流程之品管現代技術，內容包括：一般成分分析及精密儀器的基本操作、方法、原理和應用等。

142061, Analysis of Animal Products 2 S M. J. Lin, F

This course is designed to give the students to use the instruments correctly and accurately, to reduce the analytical error, to assist the students to understand the modern technique about the detection of the ingredients and the quality control of the formula feeds. The contents include basic operation of proximate composition analysis, and methods, principles and applications of instrument analysis for animal products.

142062 肉用草食家畜飼養管理 2 選 余祺，下

本課程主要討論兔及山羊等草食肉用家畜之飼養管理。內容包括品種特性、營養與飼養、管理與設備、遺傳育種與繁殖技術、疾病防治與產品利用，畜舍規劃與市場經營等主題，並特別強調在本省地區之特殊環境下，如何經由學理與技術之應用，以調適經營及管理方法，提昇生產效率。

142062 Meat-production Ruminant Farm Animal Feeding and Management 2 S C. Yu F

The objective of this course is to give the students more confidence in their abilities for meat-production herbivorous farm animals. The major concepts of this course include: major breeds of rabbits and goats, their characteristics, principles of genetics, nutrition, feeds and feeding, herd and reproductive managements, reproductive techniques, disease control, marketing, and management of products. The topics being put in the priority are those factors and techniques

that are capable of being used for improving the efficiency of rabbits and goats production under the adverse environmental conditions.

142063 安全畜產品生產導論 2 選 陳志銘，上

本課程探討安全性畜產品生產之一貫作業方式，使學生能在日後生產安全性畜產品時，能應用所學相關知識。主要課程內容包括：安全性飼料、動物飼養管理、防疫監測、安全性加工生產及安全性廢棄物處理。

142063 Introduction to Safe Animal Production 2 S C.M.Chen,F

The arrangement of this course is to let the student understand the knowledge about safe animal production chain. The major concepts of this course include: the safety definition, feeds quality, feed additives, feeding and management, diseases control, safe processing, and safe waste management.

142064 安全畜產品生產技術 2 選 陳志銘，上

本課程探討安全性畜產品生產之技術，使學生能在日後生產安全性畜產品時，能應用所學相關知識。主要課程內容包括：安全性飼料生產、動物飼養管理、防疫監測、安全性加工生產及抗生素殘留檢測分析。

142064 Techniques of Safe Animal Production 2 S C.M.Chen, F

The arrangement of this course is to let the student understand the technique about safe animal production. Specific topics including the safe feed manufacturing, feed additives, animal feeding and management, diseases control, safe animal products processing, and antibiotic residues analysis.

142065 安全畜產品檢驗與品管 2 選 林美貞、上

本課程使學生了解安全畜產品檢驗與分析的儀器與設備之基本構造、分析方法、原理與應用範疇。主要內容包括樣品處理、儀器分析原理、精密儀器分析原理、法規及標準檢驗法。

142065 Safe Animal Products Analysis and Quality Control 2 S M. J. Lin, F

This course will discuss the methods, principles, and applications of analytical instruments for safe animal products. The major contents conclude handling of samples, basic theory of analytical instruments, laws and regulation of analysis of animal products.

142066 畜產檢驗與分析實習 1 選 林美貞、上

本實習內容主要是配合「畜產品檢驗與分析」課程，使學生實際進行所需要之操作訓練；其內容包括：實驗室的安全認識、採樣及分析基本訓練、畜產品各項分析的分析方法及儀器操作等。

142066 Animal Products Analysis Practice. 1 S M. J. Lin, F

This practice course is in associate with the course of analysis of animal products to provide the training to students on this technique. The contents include the safety of laboratory, sampling and basic operation of analysis, the methods that may be employed for the detection and determination of animal products.

142067 肉品加工 2 選，下

本課程介紹肉品加工有關技術之學理與所使用設備的原理。重點將著重於使學生瞭解各種加工技術，包括肉品之醃漬、嫩化、煙燻、乳化、乾燥、添加物使用與肉品保存等之原理

與應用。

142067 Processing of Meat Product 2 S S

This course introduces technologies related to meat processing and principles of the equipments and facilities related. The purpose of this course is educating students with knowledge include meat marination, tenderization, smoking, emulsion, drying, food additives addition, meat product preservation, and etc.

142068 肉品加工實習 1 選 , 下

本課程配合肉品加工技術之正課，使得學生能在瞭解肉品加工技術有關之原理及設備的功能外，更能實際正確地操作各項設備，以製作各項產品，包括：醃漬肉排、香腸、火腿、臘肉、貢丸、叉燒、油雞等。

142068 Meat Products Lab Processing. 1 S , S

In this course, it educates students how to handling the meat processing equipments correctly. Moreover, students will apply these equipments to produce several meat products, including marinated chops, sausages, hams, Chinese bacon, Chinese meatball, BBQ pork, poultry products.

142069 乳品加工 2 選 林美貞, 下

本課程講授乳之種類及成分、原料乳之品質、原料配合、加工原理、加工製程、品質管制及貯藏。乳製品種類包涵鮮乳、調味乳、乳粉、煉乳、發酵乳、冰淇淋、乾酪、乳酪及乳油。

142069 Processing of Dairy Products 2 S M. J. Lin, S

This course includes milk compositions, raw material quality, raw material recipes of dairy products, chemical changes of processing, processing scheme, quality control and storage. Major dairy products such as fresh milk, flavored milk, milk powder, concentrated milk, fermented milk, ice cream, cheese, butter and cream will be included.

142070 乳品加工實習 1 選 林美貞, 下

本實習配合乳品技術之課程，使學生熟悉乳品之製程及品質控制。內容包括生乳及鮮乳檢驗、乳成分及微生物檢驗、鮮乳及調味乳製造、發酵乳製造、冰淇淋製造及乾酪製造。

142070 Dairy Processing Practice 1 S M. J. Lin, S

The objective of this course is to give students practical training on formula, processing and quality control of dairy products. It includes chemical, physical and microbial examinations of raw milk and dairy products, manufactures of fresh milk, flavored milk, fermented milk, ice cream and cheese.

142071 蛋品加工 2 選 , 下

本課程介紹蛋品加工有關技術之學理與所使用設備的原理。重點將著重於使學生瞭解各種加工技術，包括蛋品之濃縮、蒸煮、乾燥、酸鹼值改變、添加物使用與蛋品保存等之原理與應用。

142071 Processing of Egg Products 2 S ,

This course introduces technologies related to egg processing and principles of the equipments and facilities related. The purpose of this course is educating students with knowledge include condensation, steam cooking, drying, pH adjustment, food additives addition, egg product preservation, and etc.

142072 蛋品加工實習 1 選 , 下

本課程配合蛋品加工技術之正課，使得學生能在瞭解蛋品加工技術有關之原理及設備的功能外，更能實際正確地操作各項設備，以製作各項產品，包括：皮蛋、鹹蛋、蒸蛋、三色蛋、長蛋、滷蛋、焗蛋等。

142072 Egg Products Lab Practice. 1 S , S

In this course, it educates students how to handling the egg processing equipments correctly. Moreover, students will apply these equipments to produce several egg products, including preserved eggs, salty eggs, steaming eggs, three-colored eggs, long eggs and other egg products.

- 142073 加工廠經營管理導論** 2 選 陳志銘下
本課程主要討論食品加工廠經營管理的基本意義、目的與策略。主要內容包括：生產管理、物料管理、品質管理、行銷管理、財務管理、人事管理、危機與客訴管理及衛生安全管理等。
- 142073 Introduction to Food Processing Plant Management** 2 S C.M.Chen. S
This course will discuss the meaning, purpose and strategy of food processing plants. The major chapter contents processing management, materials management, quality management, marketing management, financial management, personnel management, and etc.
- 142074 畜產品在美容之應用** 2 選
本課程講授畜產品的特性及於美容產業之應用。課程內容包括美容產業及美容產品之介紹、畜產原料及成分之特性、乳於美容產業之應用、各種畜產副產物原料及成分之特性、特殊成分之萃取與純化、畜產副產物於美容產業之應用及相關法規。
- 142074 Application of Animal Products on Beauty Industry** 2 S
This course includes properties of animal products and their application in beauty industry. The content of this course includes the introduction of beauty industry, properties of animal products and ingredients, application of milk on beauty products, properties of animal by-products, extraction and purification of special ingredients, application of animal by-products ingredients, and related regulation.
- 142075 應用生物統計學** 2 選 張秀鑾，下
本課程旨在介紹常用於資料分析之統計基礎原理，課程內容包括矩陣代數複習、二次型分布、迴歸、變方分析與統計模式建立策略等；最終目的在建立學生具備應用 SAS 商業套裝軟體，進行複雜資料分析與準確地解釋分析結果之能力。
- 142075 Applied Biostatistics** 2 S H. L. Chang, S
The course provides an introduction to fundamental theory of the most commonly used linear models in statistical data analysis. Review of matrix algebra, distribution of quadratic forms, regression, and analysis of variance are covered, as well as statistical model-building strategies. The final goal is to equip the students with the ability to correctly apply the SAS commercial statistical packages to analyze the complex data and to interpret the results accurately.
- 142076 禽畜副產物利用** 2 選 未定，下
本課程之主要內容包含：禽畜副產物之種類、生產量、價值與特性，腸衣、脂肪、明膠、血液、毛皮及羽毛、乳品副產物及蛋品副產物等之處理與應用，及禽畜副產物在食品加工、工業與醫學上之應用
- 146076 Utilization of Animal and Poultry Byproducts** 2 S
The major contents in this course include kinds, production quantity, values, and characteristics of animal and poultry byproducts. In addition, many byproducts, including casing, lipids, gelatin, blood, fater, dairy, and egg byproducts will also be addressed. Finally, uses of these byproducts in food processing, industries, and medical application will also be included.
- 142077 兔學** 2 選 劉炳燦

本課程之討論範圍包括兔的生物學及各品種特性，營養與飼養，管理與設備，遺傳育種與繁殖技術，疾病防治與產品利用，兔舍規劃與市場經營等主題，並特別強調在本省地區之特殊環境下，如何經由學理與技術之應用，以調適經營及管理方法，提昇生產效率。

142077 Rabbit Science 2 S B. T. Liu

The objective of this course is to give the students more confidence in their abilities for producing rabbits, managing and improving rabbit industry. Dealing with the modern concepts in rabbit science, it comprises the following subjects: biology of the rabbits; major breeds of the domestic rabbit and their characteristics; principles of rabbit genetics, nutrition, feeds and feeding; herd and reproductive managements; reproductive techniques; disease control; preparation of rabbit meat, fur and wool; marketing the rabbit products; and so on. The topics being put in the priority are those factors and techniques that are capable of being used for improving the efficiency of rabbit production under the adverse environmental conditions.

142078 現代動物育種技術 2 選 張秀鑾、劉世華 動物育種學 (四下)

本課程內容主要分兩部份：第一部份講授現代分子生物學分析技術與傳統動物育種基本相關知識，第二部份為兩者結合後對現代家畜禽育種所造成之效應與影響。授課內容包括遺傳標記育種技術(如 RFLP、微衛星、SNPs 及 QTLs)、連鎖分析、遺傳與圖分析及基因體定序解讀等，以及成功案例之解說。

142078 Modern Animal Breeding Technology 2 S H. L. Chang & S. H. Liu, S

The introductory course will instruct students in basic knowledge of both modern molecular biology techniques and traditional breeding methods, and will show students how the interaction of these techniques and methods profoundly changes economical traits in farm animals. The contents of this course include mark-assisted breeding techniques (RFLP, minisatellite DNA, single nucleotide polymorphisms or SNPs, quantitative trait loci or QTLs), linkage analysis, genetic mapping, and genome sequencing. Several successful examples in animal breeding using such strategy will be also included during the lecture.

140279 生物資訊學概論 2 選 劉世華，下

本課程目的在訓練學生使用網路上的軟體程式去分析網路上的生物資料庫，並從中解讀或汲取有用的生物資訊。課程內容包括生物資料庫簡介、DNA 與蛋白質序列比對、蛋白質與 RNA 結構預測、單核苷酸多態型(SNPs)分析、演化樹建構以及生物傳導路徑等。修課學生須至少預修過生物化學、遺傳學或分子生物學(任一門皆可)。

142079 Essential Bioinformatics 2 R S. H. Liu, S

The multidisciplinary course attempts to train students using web-based programs to analyze and retrieve useful biological information from web-based database. Topics including: biological databases, sequence alignments, structure prediction on macromolecules, single nucleotide polymorphisms (SNPs), construction of phylogenies, molecular interaction of biopathway. Students are required to have taken at least one of the following classes: biochemistry, genetics, or molecular biology in advance.

140280 畜產企業實務實習 1 選

為落實畜產系學生對整體畜產經營實務之技術，藉以整合在校所學各科目之連貫性，鼓勵學生利用學期外之時間至產業界現場進行完整的經營實務訓練，而開設此一課程。本課程之安排，於事先經系務會議篩選具規模且經營上軌有制度之畜產企業單位，包括公、民營機構，雙方取得共識，安排必要之實習項目與進度，於寒、暑假期間，共實習 60 日，完成預定進度，繳交報告，並經實習單位及系主任共同考核合格者，始給予學分。

142080 Practice of Livestock 1 S

Enterprises

This course is designed to offer the students a link to the livestock industry and to enforce their

ability in operating an integrate livestock production unit. Students in this course will be appointed to some selected enterprises or companies with livestock production units during summer or winter vacations for 60 days of training program. Students who complete the practical training program with writing reports and pass the evaluation by both the department and the counterpart will be granted the credits.

142081 芻料作物及其調製

2 選

本課程主要在介紹熱帶芻料的生產利用，就土壤、作物和動物生產之相關問題進行探討，包括芻料的生長環境、芻料種類的選擇、性狀、栽培管理（如施肥、雜草防治）、芻料的收穫利用（如青割、乾草、半乾青儲料、青儲料）及草地的維護（如放牧頭數、放牧方式）並就台灣現有芻料的生產利用加以討論，以達學以致用之效果。

142081 Tropica Forage Production and Utilization

2 S

This course is designed to discuss the production and utilization of forages. The objectives of this course are to offer the relation ships among soil, forages and animal production, including: climatic factors in forage production; characters, culture, management (e.g. fertilization, weed control) and utilization of forages (e.g. silage, hay, haylage, silage); management of improved pastures (e.g. stocking rate, systems of grazing management). In addition, topics of forages in Taiwan will also be discussed so that the students will become aware of forage, application for further of livestock production.

四年制食品科學系「產學攜手計畫專班」

(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。

(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	
通識課程 General Education	12	2	2	2	2	2	2			
國文 Chinese	4	2	2							
大一英文 Freshman English	4	2	2							
英語聽講練習 101~104 Oral-Aural Training in English	2	0	0	1	1					
憲法 Constitution	2						2			
體育 Physical Education	2	1	1							
軍訓 Military Training	0	0	0							
通識教育講座 Lectures on General Education	1									各系依序開 課，開課學期 不定
外語實務 Foreign Language Proficiency Test	0									每學期開放 修課 畢業前修畢
合 計	27	7	7	3	3	2	4	0	0	

(三)學院共同必修科目

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	
普通化學(一) General Chemistry	3	3								
普通化學實驗(一) General chemistry Lab	1	1								
生物學 Biology	3	3								
電子計算機概論 Introduction to Computers	0		0							
食品科學概論 Introduction of Food Science	2		2							

生物統計 Biometry	2			2						
生物統計實習 Biometry Lab.	1			1						
生物技術 Biotechnology	2						2			
合 計	14	7	2	3	0	0	2	0	0	

(四)專業必修科目

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	
微積分 Calculus	2	2								
普通物理學 General Physics	2	2								
普通物理學實習 General Physics Lab.	1	1								
普通化學(二) General Chemistry(2)	3		3							
普通化學實驗(二) General Chemistry Lab.(2)	1		1							
食品加工(甲) Food Processing (A)	2		2							
食品加工實習(甲) Food Processing Lab. (A)	1		1							
有機化學 (一) Organic Chemistry (1)	2			2						
有機化學實習 (一) Organic Chemistry Lab(1).	1			1						
分析化學 Analytical Chemistry	2			2						
分析化學實習 Analytical Chemistry Lab.	1			1						
食品加工(乙) Food Processing (B)	2			2						
食品加工實習(乙) Food Processing Lab. (B)	1			1						
食品工程(一) Food Engineering (1)	3				3					
食品工程實習 (一) Food Engineering Lab.(1)	1				1					
有機化學(二) Organic Chemistry(2)	2				2					
有機化學實習(二) Organic Chemistry Lab.(2)	1				1					
微生物學 General Microbiology	3				3					

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	
微生物學實習 General Microbiology Lab.	1				1					
生物化學(甲) Biochemistry (A)	3					3				
生物化學實習(甲) Biochemistry Lab.(A)	1					1				
食品分析(一) Food Analysis(1)	2					2				
食品分析實習(一) Food Analysis Lab.(1)	2					2				
食品微生物 Food Microbiology	3					3				
食品微生物實習 Food Microbiology Lab.	1					1				
食品法規 Food Law	2						2			
食品化學 Food Chemistry	3						3			
生物化學(乙) Biochemistry(B)	3						3			
食品衛生與安全 Food Hygiene and Safety	2							2		
工廠實習(一) Plant practice(1)	2	2								
工廠實習(二) Plant practice(2)	2		2							
工廠實習(三) Plant practice(3)	2			2						
工廠實習(四) Plant practice(4)	2				2					
工廠實習(五) Plant practice(5)	2					2				
工廠實習(六) Plant practice(6)	2						2			
工廠實習(七) Plant practice(7)	2							2		
工廠實習(八) Plant practice(8)	2								2	
合 計	70	7	9	11	13	14	10	4	2	

(五)專業選修科目

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	

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	
食品行銷 Food Marketing	2	2								
應用電工學 Applied Electric Engineering	1	1								
應用電工學實習 Applied Electric Engineering Lab.	1	1								
營養學 Nutrition	2		2							
烘焙技術 Baking Technology	2		2							
烘焙技術實習 Baking Technology Lab.	1		1							
食品添加物與配料 Food Additives and Ingredients	2			2						
電腦在食品科技之應用 Application of Computer Technology in Food	2			2						
電腦在食品科技之應用 實習 Application of Computer Technology in Food Lab.	1			1						
食品機械 Food Machinery	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					
保健食材之加工與應用 Processing and Application of Health Materials	3				3					
食品科技英文 Professional English in Food Science	2				2					
應用食品自動控制元件 與實習 Element of Food Processing Automation and Lab.	3				3					
食品品保技術 Quality Assurance of Food Products	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				

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	
物理化學 Physical Chemistry	3					3				
食品加工自動化概論與 實習 Food Process Automation and Lab.	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			
食品分析(二) Food Analysis(2)	2						2			
食品分析實習(二) Food Analysis Lab.(2)	1						1			
機能性食品理論與應用 Functional Foods	2						2			
食品工程(二) Food Engineering(2)	3						3			
食品加工技術特論(一) Special Topics on Food Processing Technology (1)	2						2			
食品生物技術產業與經營 Industrial Business and Management for Food Biotechnology	2						2			
食品冷凍 Food Freezing	2						2			
醱酵生產技術 Fermented Food Processing	2							2		
醱酵生產技術實習 Fermented Food Processing Lab.	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		
食品包裝技術 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		
感官品評學與實習 Sensory Evaluation and Lab.	3							3		

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	
食品加工技術特論(二) Special Topics on Food Processing Technology (2)	2							2		
食品生物化學 Food Biochemistry	2								2	
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	
食品儀器分析 Instrumental Analysis of Foods	2								2	
食品儀器分析實習 Instrumental Analysis of Foods Lab.	1								1	
保健食品之生理功效 Functional Food	2								2	
飲料加工與實習 Technology of Drink Processing	2								2	
合 計	86	4	5	7	11	11	17	19		

國立屏東科技大學 食品科學系 產學攜手計劃專班四年制課程規劃表

學年	第一學年				第二學年				
	第一學期		第二學期		第一學期		第二學期		
修別	科目	學分	科目	學分	科目	學分	科目	學分	
必修	體育	1	體育	1	通識課程	2	通識課程	2	
	軍訓	0	軍訓	0	英語聽講練習 103	1	英語聽講練習 104	1	
	國文	2	國文	2	生物統計	2	食品工程(一)	3	
	大一英文	2	大一英文	2	生物統計實習	1	食品工程實習(一)	1	
	通識課程	2	通識課程	2	分析化學	2	食品工程實習(二)	2	
	英語聽講練習 101	0	英語聽講練習 102	0	分析化學實習	1	有機化學(二)	1	
	普通化學(一)	3	普通化學(二)	3	有機化學(一)	2	有機化學實習(二)	3	
	普通化學實驗(一)	1	普通化學實驗(二)	1	有機化學實習(一)	1	微生物學	1	
	生物學	3	電子計算機概論	0	食品加工(乙)	2	微生物學實習	2	
	微積分	2	食品加工(甲)	2	食品加工實習(乙)	1	工廠實習(四)		
	普通物理學	2	食品加工實習(甲)	1	工廠實習(三)	2			
	普通物理學實習	1	食品科學概論	2					
	工廠實習(一)	2	工廠實習(二)	2					
	小計		21		18		17		16
	選修	食品行銷	2	營養學	2	食品添加物與配料	2	食品調理技術	2
應用電工學		1	烘焙技術	2	電腦在食品科技之應用	2	食品調理技術實習	1	
應用電工學實習		1	烘焙技術實習	1	電腦在食品科技之應用實習	1	保健食材之加工與應用	3	
小計		4		5		7		11	

國立屏東科技大學 食品科學系 產學攜手計劃專班四年制課程規劃表

學年	第三學年				第四學年				學分總計
	第一學期		第二學期		第一學期		第二學期		
修別	科目	學分	科目	學分	科目	學分	科目	學分	
必修	通識課程	2	通識課程	2	食品衛生與安全	2	工廠實習(八)	2	110
	生物化學(甲)	3	憲法	2	工廠實習(七)	2			
	生物化學實習(甲)	1	生物技術	2					
	食品分析(一)	2	食品法規	2					
	食品分析實習(一)	2	食品化學	3					
	食品微生物	3	生物化學(乙)	3					
	食品微生物實習	1	工廠實習(六)	2					
	工廠實習(五)	2							
小計		16		16		4		2	
選修	食品殺菌技術	2	微生物檢驗技術	2	醱酵生產技術	2	食品生鮮處理技術	2	86
	食品殺菌技術實習	1	微生物檢驗技術實習	1	醱酵生產技術實習	1	食品生鮮處理技術實習	1	
	食品品保技術	2	食品生物技術產業與經營	2	食品包裝技術	2	飲料加工與實習	2	
	物理化學	3	食品冷凍	2	新產品開發與實習	3	食品生物化學	2	
	食品加工自動化概論與實習	3	食品加工技術特論(一)	2	感官品評學與實習	3	食品儀器分析	2	
			食品分析(二)	2	食品加工技術特論(二)	2	食品儀器分析實習	1	
			食品分析實習(二)	1	醱素應用技術	2	保健食品之生理功效	2	
			機能性食品理論與應用	2	醱素應用技術實習	1			
			食品工程(二)	3	分子生物概論	3			
	小計		11		17		19		

註：1.本系學生至少應修滿 136 學分始得畢業(其中必修應修 110+1(通識教育講座)學分，選修應修 24 學分)

2.學生於畢業前需修習「通識教育講座」1學分課程。各系依序開課，開課學期不固定。

3.«外語實務»每學期皆開放修課，並須於畢業前依本校「外語實務課程實施要點」規定修畢。

食品科學系（產學合作計畫專班）

Department of Food Science

課程代號 Course Number	科目名稱(中 文) Course (Chinese)	學分 Credit	科目名稱(英 文) Course (English)	頁次 Page
專業必修科目 Required Courses				
362001	微積分	2	Calculus	
362002	普通化學(二)	3	General Chemistry(2)	
362003	普通化學實驗(二)	1	General Chemistry Lab.(2)	
362004	普通物理學	2	General Physics	
362005	普通物理學實習	1	General Physics Lab.	
362006	食品加工(甲)	2	Food Processing(A)	
362007	食品加工實習(甲)	1	Food Processing Lab.(A)	
362008	有機化學(一)	2	Organic Chemistry (1)	
362009	有機化學實習(一)	1	Organic Chemistry Lab. (1)	
362010	分析化學	2	Analytical Chemistry	
362011	分析化學實習	1	Analytical Chemistry Lab.	
362012	食品加工(乙)	2	Food Processing(B)	
362013	食品加工實習(乙)	1	Food Processing Lab.(B)	
362014	食品工程(一)	3	Food Engineering(1)	
362015	食品工程實習(一)	1	Food Engineering Lab.(1)	
362016	有機化學(二)	2	Organic Chemistry (2)	
362017	有機化學實習(二)	1	Organic Chemistry Lab. (2)	
362018	微生物學	3	General Microbiology	
362019	微生物學實習	1	General Microbiology Lab.	
362020	生物化學(甲)	3	Biochemistry (A)	
362021	生物化學實習(甲)	1	Biochemistry Lab. (A)	
362022	食品分析(一)	2	Food Analysis(1)	
362023	食品分析實習(一)	2	Food Analysis Lab.(1)	
362024	食品微生物	3	Food Microbiology	
362025	食品微生物實習	1	Food Microbiology Lab.	
362026	食品法規	2	Food Law	
362027	食品化學	3	Food Chemistry	
362028	生物化學(乙)	3	Biochemistry (B)	
362029	食品衛生與安全	2	Food Hygiene and Safety	
362030	工廠實習(一)	2	Plant practice(1)	
362031	工廠實習(二)	2	Plant practice(2)	
362032	工廠實習(三)	2	Plant practice(3)	
362033	工廠實習(四)	2	Plant practice(4)	
362034	工廠實習(五)	2	Plant practice(5)	
362035	工廠實習(六)	2	Plant practice(6)	
362036	工廠實習(七)	2	Plant practice(7)	
362037	工廠實習(八)	2	Plant practice(8)	

課程代號 Course Number	科目名稱(中 文) Course (Chinese)	學分 Credit	科目名稱(英 文) Course (English)	頁次 Page
專業選修科目 Elective Courses				
362030	食品行銷	2	Food Marketing	
362031	應用電工學	1	Applied Electric Engineering	
362032	應用電工學實習	1	Applied Electric Engineering Lab.	
362033	營養學	2	Nutrition	
362034	烘焙技術	2	Baking Technology	
362035	烘焙技術實習	1	Baking Technology Lab.	
362036	食品配料與添加物	2	Food Additives and Ingredients	
362037	電腦在食品科技之應用	2	Application of Computer Technology in food	
362038	電腦在食品科技之應用實習	1	Application of Computer Technology in Food Lab.	
362039	食品機械	2	Food Machinery	
362040	食品調理技術	2	Techniques of Prepared Foods	
362041	食品調理技術實習	1	Techniques of Prepared Foods Lab.	
362042	保健食材之加工與應用	3	Processing and Application of Health Materials	
362043	食品科技英文	2	Professional English in Food Science	
362044	應用食品自動控制元件與實習	3	Element of Food Processing Automation and Lab.	
362045	食品品質保技術	2	Quality Assurance of Food Products	
362046	食品殺菌	2	Food Sterilization	
362047	食品殺菌實習	1	Food Sterilization Lab.	
362048	物理化學	3	Physical Chemistry	
362049	食品生物技術產業與經營	2	Industrial Business and Management for Food Biotechnology	
362050	食品加工自動化概論與實習	3	Food Process Automation and Lab.	
362051	微生物檢驗技術	2	Microbes Detection	
362052	微生物檢驗技術實習	1	Microbes Detection Lab.	
362053	食品分析(二)	2	Food Analysis(2)	
362054	食品分析實習(二)	1	Food Analysis Lab.(2)	
362055	機能性食品理論與應用	2	Functional Foods	
362056	食品工程(二)	3	Food Engineering (2)	
362057	食品加工技術特論(一)	2	Special Topics on Food Processing Technology (1)	
362058	醱酵生產技術	2	Fermented Food Processing	
362059	醱酵生產技術實習	1	Fermented Food Processing Lab.	
362060	酵素應用技術	2	Enzyme Methodology	
362061	酵素應用技術實習	1	Enzyme Methodology Lab.	
362062	食品包裝	2	Food Packaging	
362063	分子生物概論	3	Introduction to Molecular Biology	
362064	新產品開發與實習	3	Food Product Development and Lab.	
362065	感官品評學與實習	3	Sensory Evaluation and Lab.	
362066	食品加工技術特論(二)	2	Special Topics on Food Processing Technology (2)	
362067	食品生物化學	2	Food Biochemistry	
362068	食品生鮮處理技術	2	Post-Harvest Technology	
362069	食品生鮮處理技術實習	1	Post-Harvest Technology Lab.	
362070	食品儀器分析	2	Instrumental Analysis of Foods	
362071	食品儀器分析實習	1	Instrumental Analysis of Foods Lab.	
362072	保健食品之生理功效	2	Functional Food	
362073	飲料加工與實習	2	Technology of Drink Processing	

食品科學系 (產學攜手計畫專班)

Department of Food Science

一、必修科目 Required Courses

- 362001 微積分** 2 必 古源光
本課程從函數之連續與極限性來引導微分和積分的概念，分別討論多項式函數、三角函數、自然對數函數、雙曲線函數、多變數函數之特性與其微分、積分之技巧和應用、並介紹數列、級數、偏微分、多重積分、向量微分及微分方程式。
- 362001 Calculus** 2 R Y. K. Guu
This course is subjected to introducing the concepts of limits and continuity of functions, and then furthering to differentiation and integration, the cores of Calculus. Scopes will be covered from derivatives and integrations of various kinds of functions, such as polynomial, trigonometric, natural logarithmic, hyperbolic functions, etc. Applications of the skills of derivatives and integrations to differential equations will also be included.
- 362002 普通化學(二)** 3 必 王慶義，上
本課程為普通化學(一)之延續。其內容為：1.化學鍵I：基本觀念。2.化學鍵：分子幾何形狀與混成軌域。3.分子間引力及晶體結構。4.溶液之物理性質。5.化學動力論。6.化學平衡。7.酸鹼平衡及溶解度平衡。8.熵自由能及平衡。
- 362002 General Chemistry (2)** 3 R C. Y. Wang, S
This course covers:1.Chemical bonding I: Basic concepts. 2.Chemical bonding II: Molecular geometry and hybridization of atomic orbitals. 3.Intermolecular forces and liquids and solids. 4.Physical properties of solutions. 5.Chemical kinetics. 6.Chemical equilibrium. 7.Acids-base equilibria and solubility equilibria. 8.Entropy, free energy, and equilibrium.
- 362003 普通化學實驗(二)** 1 必 王慶義，下
本課程為普通化學實驗(一)之延續。其內容為：1.酸鹼滴定。2.硫之同素異形體。3.化學反應速率。4.化學平衡。5.固體吸附作用與色層分析。6.滲透作用。7.電解質與電離學說。8.由指示劑測定溶液中之 Ca^{2+} 標值。9.藍印刷。10.反應熱的測定。11.氧化還原反應。12.鐵生鏽的研究。13.膠體溶液的製取與精製。14.膠體溶液的性質與凝析作用。15.聚合物的合成。
- 012003 General cry Lab. (2)** 1 R C. Y. Wang, S
This course covers: 1.Acid-base titrations. 2.The allotropic forms of sulfur. 3.Reaction rate. 4.Chemical equilibrium. 5.Adsorption and chromatography. 6.Osmosis. 7.Electrolytes. 8.Determination of pH with the indicators. 9.Blue printing process. 10.Heats of reaction by calorimetry. 11.Oxidation- reduction reactions. 12.Iron rust. 13.Preparation and purification of colloidal solution. 14.The properties of colloidal solution. 15.Polymerization.
- 362004 普通物理學** 2 必 廖美松，下
力學：線性運動、轉動運動、動力學。熱力學：第零定律、熱、第一定律、與第二定律。
電學：電、直流電路
- 3620064 General Physics** 2 R M. S. Liaw, S
Mechanics: .Linear motion、Rotation、Kinetics。Thermodynamics: Zeroth law、Heat、First law、

Entropy and Second law。Electromagnetic: Electric field、DC Circuits

362005 普通物理學實習 1 必 廖美松，下
基本測量、自由落體、單擺、磨擦係數、力的分解、碰撞、表面張力、固體比熱、液體比熱、熱功當量、線膨脹、電阻定律

362005 General Physics Lab. 1 R M. S. Liaw, S
Fundamental measurement、Free falling body、Single pendulum、Friction、Components、Collision、Surface Tension、Specific heat of solid、Specific heat of liquid、Equivalents heat work、Linear expansion、Law of resistance

362006 食品加工(甲) 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(A) 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(甲) 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.(A) 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.

362008 有機化學(一) 2 必 劉展岡，上
本課程乃著重於重要之碳化合物(包括烷、烯、炔、醇、醚，有機鹵化物，芳香族化合物，醛，酮，酯與胺)胺之官能基反應，各類有機物之合成方法，相互間之關係以及其實際之應用。

362008 Organic Chemistry(一) 2 R C. C. Liu, F
A systematic study of the important classes of carbon compounds (alkane, alcohol, ether organic halide, aromatic compound, aldehyde, ketone, carboxylic acid, ester and amine)- reactions of their functional groups, methods of synthesis, relations and uses. protein are presented.

362009 有機化學實習(一) 1 必 劉展岡，上
本課程為配合非主修有機化學的教材而開設，期使使學生熟練一般實驗技術及操作，進而對教材理論的了解及應證。除物理常數之測定外，其他依官能基的種類逐一實驗；烷、烯、炔、苯、鹵烷、醇、酚、胺、醚、醛、酮、羧酸、羧酸衍生物、脂類、醣類、核酸與蛋白質。每一實驗的重點是由官能基所產生的化學、物理性質。部分實驗亦包括簡易少量的合成。

362009 Organic Chemistry Lab.(一) 1 R C. C. Liu, F
This course is devised in conjunction with the lecture material of the nonmajor organic chemistry. It intends to provide students a profound understanding of subject-matter from laboratory work

This course is designed for students who have completed organic chemistry(一) and further need a sound knowledge of modern organic chemistry. The major aspects include in this course are : the basic theory, practical aspects and application of mass, ir, nmr and uv spectroscopy; tests chemical and derivatization for each major class of organic compounds; the integrated application of spectral analysis and chemical methods in identification of organic compounds; and the basic structure and chemical properties of carbohydrate, lipid protein and nucleic acid.

362017 有機化學實習 (二) 1 必 劉展岡，下

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之化合物逐一實驗：烷、烯、炔、苯、有機鹵化物、醇、醚、醛、酮、羧酸、羧酸衍生物及胺等，每一實驗的重點是在不同官能基所產生的不同化學反應的試驗。

362017 Organic Chemistry Lab. (二) 1 R C. C. Liu, S

This course is devised in conjunction with the lecture material of the nonmajor organic chemistry. It intends to provide students a profound understanding of subject, matter from laboratory work and familiarity with basic laboratory technique. In addition to measurements of physical constants, the course is carried out in a functional approach: alkenes, alkynes, benzenes, organic halides, alcohols, ethers, aldehydes, ketones, carboxylic acids and the derivatives of carboxylic acid, amines. Each experiment emphasizes on the common chemical properties ascribed to functional groups.

362018 微生物學 3 必 謝寶全，下

本課程的內容包括：

微生物學在科學上之地位、發展歷史、未來展望。微生物之形態及分類。微生物之細胞構造及功能。微生物之遺傳。微生物之控制

362018 General Microbiology 3 R P. C. Hsieh, S

This course is offered to cover:

Introduction of microbiology, its history and development. Morphology and identification of microorganisms. Cell structure and function of microorganisms. Microbial genetics. Control of microorganisms.

362019 微生物學實習 1 必 邱秋霞，下

本課程之內容包括：

顯微鏡之使用。培養基之配製及滅菌方法。微生物之培養分離及純化。各種不同之染色法。微生物生理及生化特性探討。微生物生長條件之探討。

362019 General Microbiology Lab. 1 R C. H. Chiu, S

The lab covers how to use microscope, preparation of media and methods of sterilization, culture transfer techniques, microscopic examination of stained cell preparations, microscopic examination of living bacterial preparations, the microscopic measurement of microorganisms. Gram stain, serial dilution-agar plate procedure to quantitative viable cell, the bacterial growth curve, biochemical and physiological characteristics of microbes, cultivation and morphology of molds, yeast morphology.

**362020 生物化學(甲) 3 必 許祥純、
吳美莉 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。

Plan of curriculum this course, emphatically in food laws and regulations, the security and the effect appraisal, food source material knows and the product development technology and so on specialized knowledge teaches with the practice thorough study, with the aid of many industries and the educational world specialized teacher in the health food domain the experience and the research results, leads the student to carry on food technical practices and so on function appraisal and development, simultaneously arranges the factory practice thorough study curriculum, causes the specialty and the practice union.

362033 工廠實習〈四〉

2 必

本學程之規劃課程，著重於食品法規、安全及功效評估、食品素材認識與產品開發技術等專業知識講授和實務研習，藉助多位產業與學界專業教師在食品領域上之經驗和研究成果，帶領學生進行食品功能評估及開發等技術實習，同時安排工廠實務研習課程，以使專業和實務之結合。

362033 Plant practice 〈4〉

2 R

Plan of curriculum this course, emphatically in food laws and regulations, the security and the effect appraisal, food source material knows and the product development technology and so on specialized knowledge teaches with the practice thorough study, with the aid of many industries and the educational world specialized teacher in the health food domain the experience and the research results, leads the student to carry on food technical practices and so on function appraisal and development, simultaneously arranges the factory practice thorough study curriculum, causes the specialty and the practice union.

362034 工廠實習〈五〉

2 必

本學程之規劃課程，著重於食品法規、安全及功效評估、食品素材認識與產品開發技術等專業知識講授和實務研習，藉助多位產業與學界專業教師在食品領域上之經驗和研究成果，帶領學生進行食品功能評估及開發等技術實習，同時安排工廠實務研習課程，以使專業和實務之結合。

362034 Plant practice 〈5〉

2 R

Plan of curriculum this course, emphatically in food laws and regulations, the security and the effect appraisal, food source material knows and the product development technology and so on specialized knowledge teaches with the practice thorough study, with the aid of many industries and the educational world specialized teacher in the health food domain the experience and the research results, leads the student to carry on food technical practices and so on function appraisal and development, simultaneously arranges the factory practice thorough study curriculum, causes the specialty and the practice union.

362035 工廠實習〈六〉

2 必

本學程之規劃課程，著重於食品法規、安全及功效評估、食品素材認識與產品開發技術等專業知識講授和實務研習，藉助多位產業與學界專業教師在食品領域上之經驗和研究成果，帶領學生進行食品功能評估及開發等技術實習，同時安排工廠實務研習課程，以使專業和實務之結合。

362035 Plant practice 〈6〉

2 R

Plan of curriculum this course, emphatically in food laws and regulations, the security and the effect appraisal, food source material knows and the product development technology and so on specialized knowledge teaches with the practice thorough study, with the aid of many industries and the educational world specialized teacher in the health food domain the experience and the research results, leads the student to carry on food technical practices and so on function appraisal and development, simultaneously arranges the factory practice thorough study curriculum, causes the specialty and the practice union.

362036 工廠實習〈七〉

2 必

本學程之規劃課程，著重於食品法規、安全及功效評估、食品素材認識與產品開發技術等專業知識講授和實務研習，藉助多位產業與學界專業教師在食品領域上之經驗和研究成果，帶領學生進行食品功能評估及開發等技術實習，同時安排工廠實務研習課程，以使專業和實務之結合。

362036 Plant practice 〈7〉

2 R

Plan of curriculum this course, emphatically in food laws and regulations, the security and the effect appraisal, food source material knows and the product development technology and so on specialized knowledge teaches with the practice thorough study, with the aid of many industries and the educational world specialized teacher in the health food domain the experience and the research results, leads the student to carry on food technical practices and so on function appraisal and development, simultaneously arranges the factory practice thorough study curriculum, causes the specialty and the practice union.

362037 工廠實習〈八〉

2 必

本學程之規劃課程，著重於食品法規、安全及功效評估、食品素材認識與產品開發技術等專業知識講授和實務研習，藉助多位產業與學界專業教師在食品領域上之經驗和研究成果，帶領學生進行食品功能評估及開發等技術實習，同時安排工廠實務研習課程，以使專業和實務之結合。

362037 Plant practice 〈8〉

2 R

Plan of curriculum this course, emphatically in food laws and regulations, the security and the effect appraisal, food source material knows and the product development technology and so on specialized knowledge teaches with the practice thorough study, with the aid of many industries and the educational world specialized teacher in the health food domain the experience and the research results, leads the student to carry on food technical practices and so on function appraisal and development, simultaneously arranges the factory practice thorough study curriculum, causes the specialty and the practice union.

二、選修科目 Elective Courses**362030 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。

362030 Food Marketing

2 S

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 stategy 、international marketing (B)Individual food enterprise marketing.

362031 應用電工學

1 選

陳和賢，下

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。

362031 Applied Electric Engineering 1 S H. H. Chen, S

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.

362032 應用電工學實習 1 選 陳和賢，下

本課程包括：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。

362032 Applied Electric Engineering 1 S H. H. Chen, S

Lab.

This course Included:

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.

362033 營養學 2 選 林頌生，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。

362033 Nutrition 2 S C. S. Lin, 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 an milk and their products an practice of exchange list of different kinds of foods.

362034 烘焙技術 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。課程內空依產品特性，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，和烘培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 Technology 2 S 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 desserts. 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 烘焙技術實習 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 Technology Lab. 1 S 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.

362036 食品配料與添加物 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。

362036 Food Additives and Ingredients 2 S 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.

**362037 電腦在食品科技之應用 2 選 劉展岡、
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。

**362037 Application of Computer 2 S C. C. Liu,
Technology in Food 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.

**362038 電腦在食品科技之應用實習 1 選 劉展岡、
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。

- 362038 Application of Computer Technology in Food Lab.** 1 S C. C. Liu, 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。
- 362049 Food Machinery** 2 S 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.
- 362040 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。
- 362040 Techniques of Prepared Foods** 2 S 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.
- 362041 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。
- 362041 Techniques of Prepared Foods Lab.** 1 S W. K. Chiu, S
- 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.
- 362042 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
- 362042 Processing and Application of** 3 S 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.

362043 食品科技英文 2 選 許祥純，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。

362043 Professional English in Food Science 2 S S. C. Sheu, S

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.

362044 應用食品自動控制元件與實習 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。

362044 Element of Food Processing Automation and Lab 3 S H. H. Chen, S

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.

362045 食品品保技術 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。

362045 Quality Assurance of Food products 2 S 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.

362046 食品殺菌 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。

362046 Food Sterilization 2 S 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.

362047 食品殺菌實習 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。

362047 Food Sterilization Lab. 1 S 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.

362048 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。

362048 Physical Chemistry 3 S 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.

362049 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。

362049 Industrial Business and 2 S J. H. Guo, F

**Management for Food
Biotechnology**

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.

362050 食品加工自動化概論與實習 3 S 陳和賢，上

本課程的目標是將食品加工自動化之定義、原理、重要性、以及應用時機實例介紹給學生。課程中將包含食品製程的種類，自動化策略，以及個人電腦為主之程序控制應用。教學主軸為電腦圖形控制軟硬體之熟悉、小型自動化系統整合之電腦圖控應用。實習內容包括食品充填與瓶罐蓋檢測、食品計量、食品分類、輸送帶匯流、重量感測、溫度流量液面整合、小型自動倉儲、食品滾片切斷壓印等八組設備。將不同型態之食品製造流程分割為這八項單元操作，俾使學生熟悉生產線上不同區段之功能，並且學會使用 PLC 及電腦圖控加以控制、模擬。

362050 Food Process Automation and Lab. 3 S H. H. Chen, F

Objectives of this course are to introduce the definition and concepts, basic principles, and the applications of automation involved in food processing. Subjects covered are types of food manufacturing processes, automation strategies, and PC-based applications of process control. The core part will be in the diagram-based control software and their applications. In the laboratory, eight integrated systems representing the basic unit operations in food processing are carefully designed to provide students with practical exercises through the uses of PLC and PC-based controls.

362051 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。

262051 Microbes Detection 2 S 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.

362052 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

362052 Microbes Detection Lab. 1 S 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 coil*. 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.

362053 食品分析(二) 2 選 林碩生、
黃卓治，下

本課程著重訓練學生利用食品分析及儀器分析之專業知識，從事食品中重要特殊成分之檢驗與分析，諸如：脂肪酸、膽固醇、有機酸、維生素以及殘留藥物等。針對實習項目之檢驗方法的化學原理、儀器操作、及數據換算等之講解，為此課程之重點。

362053 Food Analysis(II) 2 S C. S. Lin,
T. C. Huang, S

Designed to acquaint the students with the application of the basic knowledge of food analysis and instrumental analysis on the determination of special of components in food products, such as: fatty acids, organic acids, cholesterol and vitamins. Analysis of the residual drugs in food products is also included.

362054 食品分析實習(二) 1 選 林碩生、
黃卓治，下

實習項目包括食品系之重要特殊成分，諸如：脂肪酸、有機酸、膽固醇、維生素(包括 VitB₁、VitC、VitE 等)及殘留藥物(包括磺胺劑及歐索林酸)等。

362054 Food Analysis Lab.(II) 1 S C. S. Lin,
T. C. Huang, S

Designed to acquaint the student with the practical operation on the measurement of some special components in food products, such as: fatty acids, organic acids, cholesterol, vitamins (Vit.B₁, C, E) and residual drugs (sulfa drug and oxolinic acid).

362055 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。

362055 Functional Foods 2 S 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 .

362056 食品工程(二) 3 選 古源光、林貞信、
劉展岡，下

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.

362059 醱酵生產技術實習 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。

362059 Fermented Food Processing Lab. 1 S 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.

362060 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。

362060 Enzyme Methodology 2 S 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.

362061 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。

362061 Enzyme Methodology Lab. 1 S 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.

362062 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。

362062 Food Packaging 2 S 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.

362063 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。

362063 Introduction to Molecular Biology 3 S 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.

362064 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。

362064 Food Product Development and Lab. 3 S 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.

362065 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。

362065 Sensory Evaluation and Lab. 3 S 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.

362066 食品加工技術特論(二) 2 選 楊季清、
林貞信，下

食品冷藏、冷凍與擠壓技術為本課程教授的主題。課程中將介紹食品在冷藏與冷凍前的處理、冷藏與冷凍期間食品品質之變化、以及如何延長低溫儲存食品之保存期和冷凍食品解凍之各種方法；同時，食品擠壓技術的由來、擠壓機的構造與維護、食品流變學、食品擠壓操作、影響食品擠壓的變數和食品擠壓程序的控制等亦將在此課程中介紹。

362066 Special Topics on Food Processing Technology (II) 2 S C.C. Yang,
J. S. Lin, S

Specific subjects covered in this course are cooling, freezing and extrusion technologies applied in the food industry. Contents include pre-treatment of foods prior to the cooling and freezing processes, changes of food qualities during these operations, how to prolong the shelf life of

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).

362071 食品儀器分析實習 1 選 黃卓治，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。

**362071 Instrumental Analysis of Foods 1 S T. C. Huang, 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.

362072 保健食品生理之功效概論 2 選 黃卓治，下

討論蔬菜、水果、豆科與穀類的特殊及保健功能之成份，包括 anthocyanin、flavonoid、isoflavone 等，東方保健食材(中草藥、菇蕈類等)所含多醣及植物鹼等，在生物體中之吸收性，在肝臟中之生物轉化作用，轉化後之代謝產物在細胞內進一步之代謝物與基因之作用，討論此等化學物質與基因之交互作用而誘發之抗氧化及解毒酵素系統與慢性病之關係，主要探討糖尿病、心血管疾病、高血壓及癌症等之形成機制與預防及膳食療養。討論食品包括香草類、中草藥、膠原蛋白、生肽類、酵素類、乳酸製品、果寡糖、幾丁聚糖、蜂膠、營養補充劑如維生素、亞麻油酸、DHA、卵磷脂等。

362072 Functional Food 2 S T. C. Hung, S

Lecture will discuss functional components such as anthocyanin, flavonoid, isoflavone, alkaloid, polysaccharide in food raw materials. The bioavailability, biotransformation in liver, metabolism in cell of the food components will be included. The interaction of the metabolites with DNA leads to the induction of antioxidant and detoxifying enzyme systems will be involved. The chemopreventive effects of these function components will be emphasized.

**362073 飲料加工與實習 2 S 楊季清、
蔡碧仁，下**

本課程介紹各種飲料之製造做法理論與程序，課程涵蓋各種蔬果果汁、乳酸飲料、咖啡與茶之飲料製造。課程包括理論與實務操作。

**362073 Technology of Drink Processing 2 S C. C. Yang,
P. J. Tsai, S**

The course introduce various beverage production process and theory. It cover various fruit and vegetable juice production , lactic acid beverage , coffee and tea beverage production. The course contain theory and practical pr