

111 學年度第 2 學期第 1 次 校課程委員會議

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一、農學院

(一) 農學院：

人工智慧與 AR/VR 開發應用 2 選 鄭博元

這門課程向學生介紹 VR 的基礎知識和數位教材製作的方法，幫助學生認識如何使用相關軟硬體工具來建置一個 VR 的數位學習內容。修完課程後，學生將具備以下能力：建置簡單虛擬實境與擴增實境應用的能力，VR360 攝影機操作能力及 3D 的互動式導覽系統實作能力。

Development and Application of Artificial Intelligence and AR/VR 2 E Bo-Yuan Cheng

The purpose of this course is to help students acquire fundamental knowledge regarding augmented reality and virtual reality, and then skills in design VR digital content. This is a problem-based learning course design. Student may not only learn how to use the software (e.g., Unity), develop capability of design VR content, and utilize VR360 camera to develop interactive virtual navigation system.

飲食產業與健康促進 2 選 羅之綱

現代人對於飲食除基本生理需求，更進一步希望食品能夠朝向精緻化及健康化，並開始注意食品中之成分是否會對人體造成傷害或增進人體之強健。此課程包含營養、保養及修養等講授課程，加強學生對於健康養生觀念及未來相關飲食產業與健康產業發展，增進學生對於兩項產業的深入瞭解。

Food and Beverage Industry with Health Improvement 2 E Chih-Kang Lo

In addition to the basic physiological needs of the diet, modern people further hope that the food can be refined and healthy, and start to pay attention to whether the ingredients in the food will cause harm to the human body or improve the health of the human body. This course includes lectures on nutrition, maintenance and self-cultivation to strengthen students' concept of health preservation and the development of related catering industry and health industry in the future, and enhance students' in-depth understanding of the two industries.

人工智慧化食品安全管理 2 選 劉展岡

本課程創新將食品安全與時下最流行的人工智慧銜接，提供學生一個未來更安全的食品藍圖，在現有的科技技術支持下學習本課程擴展視野，構思出未來食品安全之方向。課程前半將介紹如何利用感測器在食品製造各階段與後市場端執行偵測，而取得數據，這數據以電腦計算加以分類，搭配人工智慧的方式可以執行預測、預警、自動化等應用，如：結合物聯網應用於食品產銷履歷、供應鏈自動管理、與食品安全預警等，訓練學生應用於食品產業中會遇到的各種狀況。而食品安全管理是建立在風險評估的基礎上，因此在課程後半會導入風險評估於食品安全管理之應用，針對風險評估、膳食調查等龐大數據，利用大數據與人工智慧運算分析，可以更快速地得到許多重要的參數如：食品殘留容許量、建議每日攝取量、毒性當量等，用以建立食品安全管理基礎。

Artificial Intelligence and Food Safety 2 E Chan-Chiung Liu

This course innovatively connects food safety with the most popular artificial intelligence nowadays, and provides students with a blueprint for a safer food in the future. With the support of existing technology, this course expands their horizons and conceives the direction of future food safety. The first half of the course will introduce how to use sensors to perform detection at various stages of food manufacturing and the post-market end, and obtain data. The data is classified by computer calculation, and artificial intelligence can be used to perform prediction, early warning, automation and other

applications, such as : Combined with the application of the Internet of Things in food production and sales history, automatic supply chain management, and food safety warning, train students to apply it to various situations encountered in the food industry. Food safety management is based on risk assessment. Therefore, the application of risk assessment to food safety management will be introduced in the second half of the course. For huge data such as risk assessment and dietary surveys, the use of big data and artificial intelligence calculation analysis can be faster. Many important parameters such as: food residue tolerance, recommended daily intake, toxic equivalent, etc. are obtained to establish the basis of food safety management.

精準農業法規與實務

2 選

林宜賢

培育學生能力指標:

- 1.培養學生對於精準農業及智慧農業法規之基礎認知。
- 2.培養學生對於實施精準農業規劃時，能瞭解法規適用之相關實務案例，並藉此具備法律遵循的落實能力。
- 3.增加學生對於智慧農業與數位轉型之認識，以因應未來職場之需求。

Regulatory Practice of Precision Agriculture

1 E

Yi-Hsien Lin

The primary goal of this course is:

- 1.To cultivate students' basic understanding of laws and regulations of precision agriculture and smart agriculture.
- 2.To help students develop the ability of understanding the cases with regard to relevant laws and regulations when implementing precision agricultural planning, and thereby gain mastery of compliance skills.
- 3.To familiarize students with the cognition of smart agriculture and digital transformation to fulfil the needs of the workplace in the future.

(二) 森林系

理論育林學

2 選

本課程以森林生態系之基礎，個別介紹影響林木的生育地因子及其交互作用，並探討應用至人工林營造時可能面臨之問題，從生態的角度與生態系經營之理念，闡釋人工林經營在森林資源復育及環境資源保育上所扮演的角色與任務或可能面臨的衝擊，以及時代變遷下，傳統育林方法的應變。

Principles of Silviculture

2 E

This course is based on forest ecosystem. Introducing each site factor and their interactions on forest. Therefore, investigating the problems when applied in forestation. And using the idea of ecosystem management on plantation management by considering forest resource conservation and environment resource conservation. Additionally, discuss the shift of traditional silviculture under the change of times..

森林碳收支監測

2 選

本課程將介紹氣候變遷對陸域生態系碳循環之影響，並探討各種生態系碳監測的理論與方法，以了解不同監測方法的差異與限制。同時藉由森林生態系碳收支量的量測與估算，了解各項環境因子對碳吸存的影響，以及森林資源對氣候變遷及溫室氣體減量之具體貢獻。

Monitoring of Forest Carbon Budget

2 E

This course introduces the impact of climate change on terrestrial ecosystem carbon cycle and investigating each theory and methods of various ecosystem carbon monitoring to distinct the difference from each method. And also investigating the influence of environmental factors on carbon sequestration by understanding the estimation of forest ecosystem carbon budget. Therefore, investigating the contribution of forest resources on climate change and greenhouse gases elimination.

森林濕地生態學

2 選

本課程將介紹森林集水區水域生態系統，包含溪流、湖泊（水庫）、溼地、草澤及河流等內陸水域生態系統結構與功能，包括水環境的理化性質、生物多樣性與適應演化、強調陸域森林生態系與這些鑲嵌其中水域生態系之間的物質與元素循環（例如碳、營養鹽及污染物等）、環境因子與生物間的交互作用及生態系統作為區域碳循環過程的吸存與轉換角色的監測分析。課程中除了教科書知識的傳授、亦將結合申請人的相關研究成果以及國際最新資訊的介紹，以做為學習和理解的依據。藉由本課程的學習，希望學生能掌握水域生態學的基本概念與研究技巧，為進一步學習相關課程或從事水域生態環境相關研究打下基礎。

Forest Wetland Ecosystems

2 E

This course provides an overview of the ecology, management, restoration, and function of inland waters, including streams, lakes, marshes and wetlands, especially for those located in forested watershed. Students will learn the hydrology, biogeochemistry, biology, and ecology of wetlands; covered through classroom exercises, case studies, and field trips. Students will learn the techniques for identifying and delineating wetlands through hydrological and soil features, as well as carbon flux and budgets. Labs and field trips will study hydrology, soils, and vegetation of common wetland types, as well as explore the diversity of wetland ecosystems in forests, including natural, restored, and mitigation forest-wetland integrated ecosystems.

森林保護學

2 選

森林保護學為探討為害森林因子之性質及其發生之原因，並藉預防及驅除之法，以保護森林之學科。內容包括濫墾、盜伐、生育地因子（陽光、氣溫、水分、降雨、雪、風、閃電、鹽害、毒他作用）、空氣污染、森林火災、野生動物、森林昆蟲、森林病害等之危害及其保護措施。

Forest Protection Science

2 E

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

(三) 生物科技系：

天然物生技產品開發實務

2 選

施玟玲、上

經濟部資料指出，國內生技產業營業額持續成長，產業迫切需要產品研發、生產製造、智財法規、行銷管理等領域人才；且近年來消費者追求健康意識快速上升，無論是應用生技、健康福祉、製藥或醫療器材領域，天然物的應用已是目前及未來生技產業中最重要之制勝關鍵，無論是研發規模或是消費市場，消費者追求養生及健康觀念均快速上升。本課

程內容涵蓋多元，配合講授課程及實務操作課程，將提供從原料確立、產品與技術研發、市場開發、品保品管、行銷推廣與法規面，完整課程面向，將有助提升學生的產業競爭力。

Natural Biotechnology Product Development Practice 2 E W. L. Shih, F

According to the data from the Ministry of Economic Affairs, the turnover of the domestic biotechnology industry continues to grow, and the industry urgently needs talents in the fields of product research and development, manufacturing, intellectual property regulations, and marketing management. In recent years, consumers' pursuit of health awareness has risen rapidly. In the fields of health and welfare, pharmaceuticals or medical equipment, the application of natural products has become the most important key to success in the current and future biotechnology industry. Regardless of the scale of research and development or the consumer market, consumers' pursuit of health care and health concepts are rapidly increasing. The content of this course covers a variety of aspects. In conjunction with lecture courses and practical operation courses, it will provide a complete course orientation from the establishment of raw materials, product and technology research and development, market development, quality assurance and quality control, marketing and promotion, and legal aspects, which will help enhance students' industries competitiveness.

(四) 生物資源博士班：

生物技術研究特論 2 選 徐志宏、下

本課程係以期刊文獻討論之方式，介紹近年來在生物技術研究的最新趨勢與進展。主要課程內容包括：脂質體學、總體基因體學、微生物體學、生物肥料與生物防治、環境生物復育、生物能源與生物燃料、數位生物學與人工智慧、奈米科學與奈米生物學、生物材料工程、生物建構、基因體編輯、合成生物學、量子生物學、生物感應器、綠色化學與永續、RNA 療法、外泌體與再生醫療、個人化醫療等。

Special Research Topics in Biotechnology 2 E Douglas J. H. Shyu, F

This subject discusses the recent trends and developments in biotechnology through journal articles review. The main contents of special research topics include lipidomics technology, metagenomics, microbiomics, biofertilizer and biocontrol, environmental bioremediation, bioenergy and biofuel, digital biology and artificial intelligence, nanoscience and nanobiology, biomaterials engineering, biofabrication, genome editing, synthetic biology, translational biology, quantum biology, biosensor, green chemistry and sustainability, RNA-based therapeutics, exosomes and regenerative medicine, and personalized medicine.

木材科學應用與設計特論 2 選 吳東霖、下

本課程以木質材料為主要重點，介紹生物質材料特性與應用方法，木質材料通常結合其他種類材質於工程應用、工藝表現及相關改質技術等，近年環境變化與產業變動，強化優質綠環境與生態材料—木質資源材料之物理及化學利用技術之改良與運用成為重中之重，其利用於人們生活中息息相關，本課程結合木結構設計、產品開發設計及木竹籐工藝設計等，落實材料加工利用及其設計理論與實務技術。

Special Research Topics in Wood Science and Design 2 E Tung-Lin Wu, S

This course focuses on wood materials and introduces the characteristics and application methods of biomass materials. Wood materials are usually combined with other types of materials in engineering applications, process performance and related upgrading technologies. In recent years, environmental changes and industrial changes have strengthened the high-quality green environment and Ecological

materials - the improvement and application of physical and chemical utilization technologies of wood resource materials has become the top priority, and its utilization is closely related to people's lives. This course combines wooden structure design, product development design and wood, bamboo and rattan process design, etc. to implement materials Processing utilization and its design theory and practical technology.

農業環境系統碳通量監測與分析

3 選

蔡正偉、下

本課程主要針對碳及其他溫室氣體(O_3 , CH_4 , N_2O)的生物地球化學循環程序的監測與化學分析，提供理論知識與實務技術的介紹，課程目的為提供學生對於農業與其他人為活動或自然環境變化、碳及其他溫室氣體元素之生物地球化學循環與氣候變遷間連結的生物(如植被與微生物)與非生物因子(如營養狀態與土壤結構)與回饋機制 (feedback mechanisms)的深入了解；課程將介紹監測與模式分析等資訊科學技術、野外監測調查方法與實驗室化學分析技術，以觀察及量化碳與其他溫室氣體的物質與能量通量(flux)變化以及相關影響因子，例如生態系的初級生產力、生態系呼吸率以及大氣與陸地/水域生態系間的溫室氣體交換通量、以及碳吸存能力評估；此外，本課程將培養學生針對源於農業活動對碳與其他溫室氣體的生物地化循環衍生之環境問題的解決能力的培養。

Carbon Flux Monitoring and Analysis in Agricultural systems

3 E

Substantial proportion of the global carbon emissions to the atmosphere originate from agricultural activities. Otherwise, agricultural ecosystems show the potential to sequester atmospheric carbon in soils by altering agricultural managements and practices (i.e. tillage practice and crop rotation) and using agricultural inputs (i.e. fertilizers and irrigation) more efficiently. This course provides a fundamental understanding for carbon flux in various agricultural ecosystems, natural terrestrial, freshwater and marine systems as well as the exchanges and interactive relationships. Key factors and processes that control carbon biogeochemistry and climate, and how these have varied through time and reflected on anthropogenic purposes will be included in the course. Therefore, continuous long-term monitoring of carbon fluxes is essential to understand the carbon dynamics and balances between different agricultural and natural sites. Quantitative approaches to monitor and analyze carbon fixation & transformation (i.e., ecosystem metabolism), movement and storage herein will be supported by modern observations and modeling that can extend our knowledge beyond the short instrumental period. Students will develop their scientific skills through assignments building towards individual research projects that also hone a range of presentation skills.

農業生態毒理學

2 選

蔡正偉、上

18 世紀的工業革命之後，環境污染便是各國在經濟發展的過程不可避免的宿命，對生態系與人體健康產生危害的例子不勝枚舉，1960 年代末開始的綠色革命最顯著地提高了全世界的農業產量，廣泛使用化肥和農用化學品卻也造成生態多樣性被破壞及環境污染。農業生態毒理學主要探討環境污染物，包括農藥及肥料在環境介質，例如大氣、土壤及水體中的流佈與宿命(fate)，以及對生物體的影響，毒物主要暴露途徑作用、機轉及其於自分子、細胞、組織、器官、個體、族群乃至生態系層次的影響。藉由本課程學生將可瞭解如何進生態毒物風險之預測與評估以及如何進行污染農業生態系的復育及防治方式

Ecotoxicology in Agriculture

2 E

This course includes the knowledge and methods of biological testing for toxicity and health effects, risk assessment, and the impact of pollutants on environmental components and agricultural ecosystems.

Weekly material will cover the different classes of environmental chemicals, ecotoxicological effects on wildlife, human exposures and health effects, basic mechanisms of toxicity, environmental epidemiology, and methods for the remediation of contaminated sites. The goal of this course is to introduce the student to the field of Ecotoxicology, where the basic principles of toxicology are applied to environmental problems. Basic concepts will be covered including chemical and physical disease causing agents, fate and transport of xenobiotics in the environment, mechanisms by which xenobiotics interact with the biosphere, dose-response relationships, toxicity testing, pharmacokinetics and metabolism of xenobiotics, adverse effects associated with exposures and risk assessment.

(五) 動物科學與畜產系：

人機與 PLC 程式編寫於畜產設備之運用 1 選 鄭富元, 上

本課程將介紹市面常用之人機與 PLC 機型與特性，透過實際的程式編程與範例操作，讓碩士班學生了解程式編寫邏輯與應用，未來可以運用在智能化設備的開發上，用以提升畜牧產業之自動化應用能力，並培養研究生程式編輯能力，以提升畜產領域之競爭能力。

Application of HMI and PLC Coding on Animal Equipment 1 E F. Y. Cheng F

This course will introduce models and characteristics of human-machine interface (HMI) and programmable logic controller (PLC) machine commonly used in the market. Through actual programming and operations, students in the master's class will learn the application of programming, which can be used in developing artificial intelligence instrument, as to improve the use of automation application in the animal husbandry industry, in the meantime enhancing the ability of students in programming and increasing post-graduation competitiveness in the animal industry.

(六) 農園生產系：

校外實習 (1) 4 必

本課程提供學生在校外實習，讓學生初步了解產業之現況。

Internship (1) 4 R

This course provides students with off-campus internships to give students a preliminary understanding of the current state of the industry

校外實習 (2) 5 選

本課程提供學生在校外實習，並接續校外實習 (1) 課程，深化學生與產業的關係。

Internship (2) 5 E

This course provides students with off-campus internships, and continues the off-campus internship (1) course to deepen student-industry relationships.

學士論文 1 選

本課程教學生將專題實務之研究資料寫成正式期刊文章之訓練。

Bachelor Thesis 1 E

This course provides students with training in writing formal journal articles from research material on topical practice.

二、 工學院

(一)車輛工程系：

新能源概論 3 選

新能源泛指傳統能源之外的各種能源型態，包括太陽能、風能、氫能、生物質能、核能等。本課程授課內容包含新能源科學基礎、新能源技術與材料、新能源經濟與政策等。學生可藉由本課程之學習，熟悉關於能源永續性議題、世界發展趨勢。本課程可培養學生對國際脈絡之興趣，啟發成為全球公民之素養。

Introduction to New Energy 3 E

New energy generally refers to various energy types other than traditional energy. It takes into account of solar energy, wind energy, hydrogen energy, biomass energy, nuclear energy, etc. The content of this course includes the scientific basis of new energy, new energy technology and materials, new energy economy and policy, etc. Through this course, the students acquire knowledge about energy sustainability issues and world development trends. This course can also cultivate students' interest in international context and inspire their qualities of becoming a global citizen.

(二)機械工程系：

電腦數值控制工具機與實習 3 選

介紹電腦數值控制工具機的基本構造，操作面盤的功能及使用，加工程式的傳輸，工作定位夾持，刀具選用及補正操作。經由實際加工，熟練電腦數控車床和銑床的操作，工件尺寸的測量，完成各類工件的精密加工。

Computer Numerical Controlled Machine Tools Internship 3 E

The fundamental construct of a computer numerically controlled machine tool is introduced. The functions and operations of the control panel, the transfer of the manually or automatically created program, the positioning and fixture of a workpiece, the selection of tools and modified length or diameter of tools in machining process are practiced. By conducting the operations in CNC lathe and miller, and learning the measuring methods, most kinds of precision machined components can be achieved.

可程式控制與實習 3 選

本課程要旨為介紹近來工業界最常用之可程式控制器，其優點為精確、功能大、價格低、抗高溫及擴充性大。課程內容包括：控制器軟硬體介紹、撰寫程式、安裝及維修。

Programmable Logic Controller Internship 3 E

The purpose of this course is to introduce the most-used programmable controller (PLC) in industries. The advantages of PLC are precision, easy-use, low-cost, anti high-temp and easy-expand. The course includes as follow: Hardware and software of PLC, Programming of PLC, Maintaining and Installing of PLC.

機器人手臂機構設計與實習(特色課程) 2 選

本課程將教授各式基礎工業機器人機構運動，包括工業機器人主體部分機構運動、驅

動系統部分機構運動、控制系統部分機構運動以及工業機器人四種臂部的運動形式介紹(包括直角坐標型、圓柱坐標型、球坐標型、關節型)。除此之外，也將介紹工業機器人運動中點位型和連續軌跡型的控制機能、具備智能系統的工業機器人(觸覺、力覺與視覺)所需之機構設計。最後，透過兩次專題練習來提升學員對此技術的熟悉程度。

Mechanism Design and Practice in Robot 2 E

This course will teach the basic mechanism movement of industrial robot, including the movement of the main body part, the drive system, the control system, and the movement of the four types of industrial robots (including rectangular coordinate, coordinate system, spherical coordinate type, joint type). In addition, the mechanism design of the industrial robot (tactile, force and vision) with the intelligent system of the industrial robot in the point of position and continuous trajectory control function will be introduced. In the end, two project exercises will use to help students understand more of this technology.

機電整合與實習 3 選

本課程主要學習機電整合系統之相關元件及其基本架構。內容包括控制系統架構及微處理器控制系統介紹、機電特性簡介、運算放大器各種應用電路設計與信號調整、電力控制半導體、感測器、機電元件匹配與介面等。本課並安排電腦實習來輔助正課重點內容學習。

Mechanism Design and Practice in Robot 3 E

This course studies the basic practice of electromechanical system components and structures. It introduces basic control system components and configuration, from feedback control system structure and microprocessor-based control system to components realization such as mechanical system design, power driver circuits design and sensor selection; topics include interface circuits between the mechanics and electronics, operational amplifier design and signal conditioning. computer simulatin lab is provided to assist major topics study.

機器人手臂實務應用與實習 (特色課程) 3 選

本課程內容在培訓學生具有工業機器手臂之實務技術，課程內容強調實作能力技術養成，包括工業手臂維修、保養、應用與實務設計。

手臂應用技術為主要重點內容，學習主題如下：

1. 工業機械手臂結合力覺感測技術。
2. 工業機械手臂結合視覺感測技術。
3. 工業機械手臂之 3D 量測技術。
4. 工業機械手臂之組裝技術。
5. 工業機械手臂之農產品深度加工技術。

The Techniques and Practices of Robot Arm 3 E

The objectives of this course will train students with the practical skills and knowledge of industrial robot arm technique. The contents of practical learning include robot repair, aintenance, control, application and design and so on. Above all, the learning in practice is the most important in this course. The topics of practical learning include :

Robot arm with force sensor technique, robot arm with vision sensor technique, robot arm applied to 3D measurement technique, robot arm applied to ensembling technique and robot arm applied to deep

processes in the agricultural products.

進階機電整合與實習

3 選

本課程主要學習機電整合系統之相關元件及其基本架構。內容包括控制系統架構及微處理器控制系統介紹、機電特性簡介、運算放大器各種應用電路設計與信號調整、電力控制半導體、感測器、機電元件匹配與介面等。本課並安排電腦實習來輔助正課重點內容學習。

Advanced Mechanism Design and Practice in Robot

3 E

This course studies the basic practice of electromechanical system components and structures. It introduces basic control system components and configuration, from feedback control system structure and microprocessor-based control system to components realization such as mechanical system design, power driver circuits design and sensor selection; topics include interface circuits between the mechanics and electronics, operational amplifier design and signal conditioning. computer simulatin lab is provided to assist major topics study.

人工智慧在機器人手臂應用與實習

3 選

這門課程向學生介紹了人工智慧在機器人手臂的應用之基礎知識表達、解決問題和學習方法。幫助學生獲得在不同環境下是如何運用將人工智慧應用在機器人手臂。修完課程後，學生將具備以下的知識：人工智慧的理論是如何應用在機器人手臂上。

Mechanism Design and Practice in Robot

3 E

This course introduces students with the basic knowledge representation, problem solving, and learning methods of artificial intelligence application in robotic arm. It helps students gain about how artificial intelligence applies to robotic arm under a variety of circumstances. Upon completion of this course, students should be able to understand how artificial intelligence theorems will be applied to robotic arm system.

專題研究(1)

3 選

此課程培養學生運用專業技能進行主題式專題研究，藉由所學理論與實作加以應用與實現。

Independent Studies(1)

3 E

The goal of this course is to educate the professional skill of technology through learning theory and its applied skills.

專題研究(2)

3 選

此課程培養學生運用專業技能進行主題式專題研究，藉由所學理論與實作加以應用與實現。

Independent Studies(2)

3 E

The goal of this course is to educate the professional skill of technology through learning theory and its applied skills.

傳閱附件 1-3--本校各學院所屬各系(所)課程中英文摘要-管理學院

三、 管理學院

(一)時尚設計與管理系：

流行分析

2 選

徐秀如

以服裝歷史背景來分析流行與社會、文化的關係及其發生的原因與傳播途徑。

Fashion Trend Forecasting

2 E

Hsu, Hsiu-Ju

Historic analysis of fashion in relation to the social and cultural environment and its causes as well as the way of transmission.

流行分析實務實習

1 選

徐秀如

以實務實習方式演練流行趨勢分析，例如練習分析目前流行趨勢、分析趨勢的演變、列出流行資源清單、建立個人的趨勢部落、製作簡報及追蹤趨勢等等。

Practice of Fashion Trend Forecasting

1 E

Hsu, Hsiu-Ju

Practicing the analysis of fashion trend forecasting, including analyzing a current trend, analyzing the evolution of a trend, listing of fashion resources, building a personal trend, making presentations and tracking trends...etc.

(二)工業管理系：

企業參訪

3 選

產業環境快速變革導致企業間競爭日益激烈，許多國內外知名企業憑藉其獨特的經營策略得以在高度競爭壓力下存活，非常值得參訪學習。本課程以企業實務參訪取代傳統的課堂講授，帶領學生實際走入國內外知名企業進行深度參訪，並憑藉學生本身之實務工作經驗，在授課教師的引導之下與參訪企業主管進行交流，藉此達到學習企業經營管理相關知識之目的。

Company Visits

3 E

The rapid changes in the industries have led to increasing competition among enterprises. With their unique business strategies, many well-known domestic and foreign enterprises have survived under high competition pressure. These competitive companies are worth visiting and learning. This course replaces traditional classroom lectures with business practice visits, leading students to visit well-known domestic and foreign companies for in-depth visits. Relying on the practical work experience of the students themselves, under the guidance of the teachers, they can communicate with the managers of the visited enterprises. This approach can achieve the purpose of learning relevant knowledge of business management.

(三)財務金融國際學士學位學程：

英語檢定

1 選

本課程旨在透過密集的英語能力檢定模擬測驗，提升學生英語能力及強化學生應試技巧，以期學生於畢業前順利通過本系之英文門檻。

English Proficiency Test

1 E

This course aims to enhance students' English proficiency and exam-taking skills through intensive simulation tests in class. By the end of the course, students are expected to be able to meet the English proficiency requirement for graduation..

(四)農企業管理系：

農業區塊鏈設計與應用

3 選

劉芳怡, 下

近年來，區塊鏈的技術不斷發展，人們的認知也從單純的數字貨幣轉移到利用此技術應用在不同的行業上。因為區塊鏈的特性，與農業有著密不可分的緣分。本課程通過對區塊鏈技術在農業應用場景的探討，介紹區塊鏈應用於農業供應鏈的六種主要方式，包含：(1)食品溯源之區塊鏈應用；(2)農產品管理之區塊鏈應用；(3)農業市場創建之區塊鏈應用；(4)農業數據共享之之區塊鏈應用；(5)獲得資金以及付款之之區塊鏈應用。

Agricultural Blockchain Design and Application

3 E

F.Y. Liu, S

In recent years, blockchain technology has been continuously developed, and people's cognition has also shifted from pure digital currency to the application of this technology in different industries. Because of the characteristics of blockchain, it is inseparable from agriculture. This course discusses the application scenarios of blockchain technology in agriculture and introduces the six main ways that blockchain is applied to the agricultural supply chain, including: (1) blockchain application for food traceability; (2) blockchain application for agricultural product management area; (3) blockchain application for agricultural market creation; (4) blockchain application for agricultural data sharing; (5) blockchain application for obtaining funds and payment.

農業大數據分析（全英授課）

3 選

劉芳怡, 上

本課程著重於理論與實踐的平衡觀點，使學生能夠理解農業社群大數據分析對農企業管理的意義與影響。透過農業社群大數據分析方法及商務應用的介紹，讓同學對大數據的使用有更深的認識。最後希望透過實際操作體驗大數據視覺化工具的過程，讓學生能學會分析與使用農業社群大數據資料。本課程為使同學熟悉社農業社群數據操作，課堂中包含(1)農業社群大數據理論剖析；(2)農業社群大數據工作坊實務；(3)社群口碑資料庫工具實機操作；(4)針對農業「輿情分析」、「話題開發」等社群個案進行實作教學。透過實作演練，直接將農業社群大數據課程中的收穫應用於實戰中。

Agricultural Big Data Analysis

3 E

F.Y. Liu, F

This course focuses on a balanced view of theory and practice so that students can understand the significance and impact of agricultural community big data analysis on agribusiness management. By introducing big data analysis methods and business applications in the agricultural community, students will have a deeper understanding of the use of big data. Finally, through the actual operation of big data visualization tools, students can learn to analyze and use big data from the agricultural community. This course is to familiarize students with the operation of social and agricultural community data. The class includes (1) theoretical analysis of agricultural community big data; (2) agricultural community big data workshop practice; (3) The use and operation of the social word-of-mouth database; (4) Practical teaching for agricultural "public word-of-mouth analysis", "topic development" and other community causes. Through practical exercises, directly apply the gains from the agricultural community big data course to practice.

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

四、人文暨社會科學院

(一)休閒運動健康系：

休閒與健康機構職場實務 1 選

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。

Practical Training of Leisur and Health Institution 1 E

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.

進階飛輪運動與指導 2 選

以動態性身體活動為方式，希望學生透過運動的技術練習、規則講解、分組個人與團隊練習等，提升學生對各類休閒運動之技能，並增進運動指導之能力。

Recreational Sport and Instruct 2 E

With dynamic physical activities, students are expected to improve their skills in various recreational sports and enhance their ability to instruct sports through sports technical exercises, rule explanations, group personal and team exercises, etc..

(二)客家文化產業研究所：

文化資產與六堆客家 3 選 曾純純

本課程以世界文化遺產發展的潮流及脈絡為開端，並介紹臺灣的文化資產及法規，而客家文化資產內容的討論，將關注於六堆地區。本課程重點有二：一、了解文化資產發展的脈絡，二、對於客家、六堆文化資產的認識。再者，期能透過文化資產的議題，讓學生對於過去人們在這片土地上所遺留的人事物，無論是有形文化或無形文化，能建立對地方的認識及在地的認同。

Cultural Heritage and Liugdui Hakka 3 E Cheng Chun-Chun

This course focuses on two points. First, it is to understand the context of the development of cultural heritage, and the second is to know Hakka and Liugdui heritage. We hope the students have a better understanding that it took place in the land in the past, and have local identity.

五、國際學院

(一)熱帶農業暨國際合作系：

應用微生物學

2 選

本課程主要講授微生物各類應用生產物之生產工業，諸如酒精工業、有機酸工業、胺基酸工業、核酸工業、石油微生物工業、抗生物質工業及生理活性物質等生產工業。此外，微生物生產之酵素製劑產業，微生物之菌體篩選應用產業等更技術性也會在課堂中做更進一步的討論。

Applied Microbiology

2 E

This course includes: The production industries of microbial metabolites such as alcohol, organic acid, amino acid, nucleic acid, petroleum microbial industry, antibiotics and physiological active substance production industry. In addition, discuss enzyme production industry of microbes and single cell isolation which are applied in industries.

國際財務管理個案

2 選

本課程主要講授微生物各類應用生產物之生產工業，諸如酒精工業、有機酸工業、胺基酸工業、核酸工業、石油微生物工業、抗生物質工業及生理活性物質等生產工業。此外，微生物生產之酵素製劑產業，微生物之菌體篩選應用產業等更技術性也會在課堂中做更進一步的討論。

Case Studies in International Finance

2 E

This course aims to provide students with the comprehensive understandings of corporate international finance related field through real cases. The contents of cases covered in this course include Financial Analysis and Forecasting, Estimating the Cost of Capital, Capital Budgeting and Resource Allocation, Management of the Firm's Equity: Dividends and Repurchases, Management of the Corporate Capital Structure, and Analysis of Financing Tactics: Leases, Options, and Foreign Currency.

水生動物健康管理

2 選

由於水產養殖業正在將產業擴展到新的地理區域，具有致病潛力的新微生物和寄生蟲物種將繼續出現，水生動物傳染病陸續上升的趨勢對水產養殖業造成重大損失。本課程將討論水生動物健康管理、生物安全和與系統相關的具體問題的原則，上課方式為課堂講授、小組討論、案例研究及書面報告。

Aquatic Animal Health Management

2 E

Aquatic animal infectious diseases are steadily increasing resulting in major loses to aquaculture industry. Since the aquaculture is expanding industry to new geographic areas, new microbial and parasitic species with pathogenic potential will continue to emerge. To understand the principles of aquatic animal health management, biosecurity and specific issues associated with the system will be discussed in this course. This knowledge will be gained through lectures, group discussion, case studies, and written assignment submissions.

永續大學講堂：全球實踐與永續發展

3 選

張珮君、曾昱、吳幸潔

本課程旨在探討目前全球所面臨最具挑戰性的議題：在社會包容、環境持久和經濟許可的前提下，如何推動全球發展？課程內容將針對經濟、社會生活以及地球物理環境之間複雜的相互影響，和人類活動對地球環境所造成的影響和解決方法等議題進行討論。同時，

本課程將以台灣、印尼、泰國、土耳其、匈牙利和埃及等不同國家為背景，鼓勵學生進行討論和發想。

Sustainable Universities: Global Practices on Sustainable Development Goals 3 E

The course is designed as an undergraduate-level introduction to one of the most challenging questions faced by our generation: how can the world evolve in ways that are socially inclusive, environmentally durable, and financially viable? The course discusses the complex interplay between the economy, social life, our planet's physical environment, as well as the consequences of human activities on the planet's environment and solutions. It contextualizes these challenges in different countries including Taiwan, Indonesia, Thailand, the Republic of Türkiye, Hungary, and Egypt.

(二)觀賞魚科技及水生動物健康國際學位專班：

魚病臨床微生物學 2 選

本課程講授魚類之各種病原性微生物（包括細菌、黴菌、病毒等）之分類、形態、培養、生化特性及其病原性，並強調各種實用、有效且快速之分離鑑定、診斷、治療等之基礎科學。

Clinical Microbiology for Fish Disease 2 E

This course helps to understand the basic knowledge about clinical microbiology in the field of aquatic animal health. It encompasses: (1) what/who is pathogen in fish disease, (2) collection, transportation and preservation of pathogens and specimens, (3) safety protection for working in the microbiological laboratories, (4) how to isolate the various pathogens, such as bacteria, fungi and viruses, (5) rapid and accurate identification by utilizing morphological, biochemical, immunological and molecular biological methods, (6) antimicrobial sensitivity tests for drug therapy.

(三)動物用疫苗國際學位專班：

進階病毒學 2 選 吳幸潔、外籍教師

病毒學課程的安排，主要是提供病毒的基本概念及其所引發疾病之間的關係，使學生於學習防疫應用技術課程之前預作學理基礎之培養。課程包括總論以及個論兩部分，總論以介紹病毒的特性，其如何感染動物與致病機制為主，個論則依不同病毒科，分別介紹所引致各種動物之疾病。除基本知識傳授外，有關新興傳染病和新的實驗室診斷技術也會列入討論中。

Advance Virology 2 E Hsing-Chieh Wu、etc.

The virology course is mainly to provide the basic concepts of viruses and the relationship between the diseases they cause, so that students can prepare their theoretical foundation before learning the courses of applied technology for epidemic prevention. The course consists of two parts: general theory and individual theory. The general theory mainly introduces the characteristics of the virus, how it infects animals and its pathogenic mechanism, and the individual theory introduces the diseases caused by various animals according to different virus families. In addition to basic knowledge transfer, discussions on emerging infectious diseases and new laboratory diagnostic techniques will also be included.

六、 獸醫學院

(一)動物疫苗科技研究所：

醫材法規與檢驗登記實務

2 選

王祥宇、宋維文

本課程主要介紹醫療器材管理之相關法規，其中重點條文說明，醫療器材分類分級，以及進行醫療器材登記所需準備之文件、進行之試驗、流程，及必須注意之事項。除課程講解外，亦將規劃 PBL 教學方式讓學生以分組進行醫療器材登記實地申請書撰寫實作，提供思考公司設立與登記送件過程實務經驗，使學生對本課程更加熟悉。

Regulations on Medical Device and Practice of Inspection and Registration 2 E

Hsian-Yu Wang and Wei-Wen Sung

This course introduces the laws and regulations on medical device management, including key provisions, classification and grading of medical devices, documents required for medical device registration, tests to be performed, procedures, and the points for attention. In addition to lecture, students will also be asked to write the application forms for medical device registration in groups as PBL teaching method. Let students consider the process of company establishment or document delivery. This will make students more familiar with the application process through practical participation.

動物疫苗與生物安全

2 選

鍾曜吉

本課程主要教導學生有關實驗室及牧場生物安全相關知識以及農場對應之防疫監控系統相關知識與應用，以因應日益嚴峻之新興動物傳染病及國際疫情。其課程內容包括介紹實驗室生物安全、牧場生物安全及國家生物安全等基本知識，並藉由近代新興傳染病及國際疫情探討生物安全相關風險及對應之防疫監控策略。課程中也針對動物防疫、檢疫、檢驗效能及疫苗研發進行，進行深入討論，使學生能夠對此領域有更深入的了解。

Animal Vaccine and Biosecurity

2 E

Yao-chi Chung

This course mainly teaches students about biosafety related knowledge and corresponding knowledge and application of epidemic prevention monitoring system to cope with emerging animal infectious diseases and international epidemics. The content of the course includes the introduction of basic knowledge of laboratory biosecurity, pasture biosecurity and national biosecurity, and discusses biosafety related risks and corresponding epidemic prevention monitoring strategies through modern emerging infectious diseases and international epidemics. The course also conducts in-depth discussions on animal epidemic prevention, quarantine, inspection efficacy and vaccine development, so that students can have a deeper understanding of this field.

七、達人學院中英文課綱

物聯網實作

3 選

徐子圭

利用樹莓派(Raspberry Pi)為硬體載台，結合 Python 程式為框架，結合相關感測器，體驗 IoT 物聯網實作應用。課程由初學者入門，認識樹莓派的發展及模組件購置及組裝，基本 Python 程式語法認識及撰寫，並導入樹莓派(Raspberry Pi)硬體控制各元件及資料整合應用。

Impementation

3 E

U. K. Hsu

Raspberry Pi which is a ultra-small and affordable computer costs less than most video games, but can be used to learn coding, build robots, and create all kinds of weird and wonderful projects. The world needs programmers more than ever, and Raspberry Pi has ignited a love of computer science and technology in a new generation. People of all ages use Raspberry Pi to create exciting projects: everything from retro games consoles to internet connected weather stations. So if you want to make games, build robots, or hack a variety of amazing projects, then this course is here to help you get started.

自動控制與實習

3 選

陳智勇

本課程學習閉回路控制系統的觀念及其數學模式建立技巧。控制系統之轉換函數和狀態空間模型之分析與設計。包括閉回路控制系統特性，瞬時反應分析，根軌分析法，及頻率響應分析法等。

Automatic control and practice

3 E

C. Y. Chen

This course studies the concepts and mathematical modeling techniques of feedback control systems. Analyses and designs the control system models of both transfer function and state space model. Topics include feedback control system characteristic, transient-response analysis, root-locus method, and frequency responses method.

計算機在生物系統之應用

3 選

陳智勇

本課程乃針對生物系統工程有關連的各種問題為對象，熟練各種數值計算、統計之程式設計，以數學、統計計算領域直接解析生物系統工程上的問題。使學生對生物系統工程分析有基本能力。

Application of Computer in Biological System

3 E

C. Y. Chen

The objects of this course point at involving each questions of biosystem engineering, practicing each kind of programs designing about numerical mathematics or statistics, solving the problem of biosystem engineering. It provides the basic ability analysis of biosystem engineering.

創新創業學堂新開課程中英文課綱

創業計畫及貸款申請書撰寫實作

1 選

顏嘉宏

政府創業貸款計畫介紹、創業風險評估、工作室(公司)設立流程、財務分析(損益表)、創業計畫書撰寫-商品(或服務)名稱、價格及獲利、創業計畫書撰寫-主要用途、功能及特點、創業計畫書撰寫-營業時間及尖峰時段(天、週、月、年)、創業計畫書撰寫-分析現有客源及潛在客源、創業計畫書撰寫-如何擴大客源、創業計畫書撰寫-償貸計畫、創業計畫書撰寫-自傳簡述(含創業動機)。

Writing Practice of Business Plan and Loan Application

1 E

C. H. Yen

Introduction (business loan program in Taiwan), Assessment of entrepreneurial risk, Porcess of registering company (or workshop), Financial analysis (income statement), Business plan-product introduction、Business plan-major purpose, Business plan-business hours & rush hour, Introduction of major customers, How to increase customer source, Loan repayment plan, Autobiography & entrepreneurial motivation.

創業基礎與實務(5) 0 · 3 選 陳又嘉
人脈心法、B to B, B to C 行銷人脈學、人脈建立方式。

Foundation and practice of entrepreneurship(5) 0 · 3 E Y. C. Chen
The complementary natures of resource theory and interpersonal. Connection knowledge of B to B, B to C.

創業基礎與實務(6) 0 · 2 選 陳又嘉
企業加盟體制與架構之說明，了解加盟制度以保護創業加盟者創業資本。

Foundation and practice of entrepreneurship(6) 0 · 2 E Y. C. Chen
The franchise relationship is based on a contract between the franchisor and franchisee.

產業增能學堂新開課程中英文課綱

台灣世曦典範工程實務研習(1) 0 · 5 選 徐文信
本課程邀請台灣世曦工程顧問股份有限公司的資深工程師，就其所參與過的重大工程建設進行分享；包括從規劃、施工、完工到營運各階段遭遇到的困難及克服過程。讓學子們了解隱藏在一件偉大工程完工背後的艱辛，有助於踏入職場後的成長。

The Model Engineering Practice Study of CECI(1) 0 · 5 E W. S. Shyu
This course invites senior engineers from CECI to share about the major construction projects they have participated in, including the difficulties encountered in each stage from planning, construction, completion to operation and the process of overcoming them. Let the students understand the hardships hidden behind the completion of a great project, which will help them grow after entering the workplace.

健身產業行銷策略與實務應用(2) 0 · 5 選 蘇蕙芬
分享該如何進入健身產業並成為一名專業的運動教練，讓自己在眾多健身教練當中突破重圍，成功開發新客戶同時也留住熟客的關鍵技巧，搭配個案研討及豐富的課程內容，激發同學創造力。以淺顯易懂的方式分析目前健身房經營的未來發展趨勢與關鍵成功因素，讓同學能融會貫通。搭配實務操作課程，加強學生的專業技能與知識，讓同學畢業後投入健身職場時能更加順利。

Business strategy and application for the fitness industry(2) 0 · 5 E H. F. Su
This course share how to use gym marketing strategies to break through the barriers of many Sports coach, to successfully develop new customers while also retaining the key skills of regular customers, with case studies and rich course content to stimulate students' creativity. nalyze the future development trends and key success factors of existing gym operations in a simple and easy-to-understand way, so that students can understand them. hrough Practice course, strengthen Professional skills and knowledge, Find a job faster after graduation..

永續發展學堂新開課程中英文課綱

婦女常見疾病與衛生保健 1 選 王仁星
婦科常見檢查、下腹疼痛鑑別診斷及處置、不正常陰道出血鑑別診斷及處置、更年期保健。

Common gynaecological disease and health protection 1 E J. S. Wang
Common gynaecological examination, lower abdominal pain (differential diagnosis and management), abnormal vaginal bleeding (differential diagnosis and management), preventive care for menopausal

syndromes.

手機應用程式 APP 概論

1 選

吳宗哲

本課程主要是以在線軟體開發安卓手機應用程式 APP。目的是使同學了解手機應用程式 APP 基本架構，並自行開發簡易手邊實務軟體，以輔助專業工作的基本功能需求。課程主要綱要如下：介紹手機應用程式 APP 開發環境與介面操作方式。教導同學完成 3 種專案工具。專案工具是常見工具加入額外設計的專業輔助工具：工程與專業需求計算機、定位紀錄工具、工作記事簿紀錄工具。完成 1 種使用指定功能小專題自行發想個人常見的可實踐需求項目作為最終實作項目。

Introduction to Mobile Apps

1 E

T. C. Wu

This course mainly uses online software to develop Android mobile application APP. The purpose is to enable students to understand the basic structure of mobile phone applications, and to develop simple practical software to assist the basic functional requirements of professional work. The main outline of the course is as follows: Introduce the APP development environment and interface operation methods of mobile phone applications. Teach students to complete three project tools. Project tools are professional auxiliary tools that add additional design to common tools: engineering and professional requirements computer, positioning record tool, and work notebook record tool. Complete a small project using the specified function to create a personal common practical requirement project as the final implementation project.

智慧農業物聯網實務

1 選

吳宗哲

本課程主要是從認識物聯網基本架構開始，介紹感測元件種類、嵌入式系統製作基礎、雲端資料庫功能與類型、大數據資料收集目的與應用、通訊設備選擇與建構方式、伺服器建構基礎與框架應用、手機 APP 設計軟體種類與實際功能操作嘗試。以協助學生了解物聯網建構方向，盡可能完整專業知識所需的資料收集與控制自動化之概念。每堂課介紹不同類別的相關知識，在同時配合現有實務成果進行相關說明，學生可透過關聯性加深思考物聯網應用。在每節課堂請學生填寫課堂心得，以了解學生對於物聯網各階段的理解與想法。

Smart Agriculture Internet of Things Practice

1 E

T. C. Wu

This course mainly starts from understanding the basic structure of the Internet of Things, introduces the types of sensing components, the basis of embedded system production, the functions and types of cloud databases, the purpose and application of big data data collection, the selection and construction of communication equipment, and the basics of server construction And frame application, mobile APP design software types and actual function operation attempts. To help students understand the construction direction of the Internet of Things, as much as possible to complete the concept of data collection and control automation required for professional knowledge. Each class introduces different types of relevant knowledge, and at the same time provides relevant explanations in conjunction with existing practical results. Students can deepen their thinking about IoT applications through relevance. In each class, students are asked to fill in their classroom experience to understand students' understanding and thoughts on the various stages of the Internet of Things.

本校「二年制副學士學位專班」(二專)

校定共同必修中英文課程摘要

通識課程 2 必

為非專業性、非職業性、和普通性的通識課程，供給統合的知識，以改變學門分立、知識零碎的弊害，引導學生在各個學域有統整的學習經驗，得以省思人與環境、人與社會和人與自己的和諧並運用於生活中。

General Education 2 R

Provide integrated knowledge for non-professional, non-vocational, and generalized education courses to reverse the disadvantages of separation of disciplines and fragmented knowledge, and guide students to have a comprehensive learning experience in various fields of study, so as to reflect on human beings and our relationship with the environment, human and society, and human and self before applying these knowledge in life.

應用中文 2 必

提高學生閱讀、思考與欣賞、寫作能力，分為閱讀與寫作兩大部分。閱讀分為「古典文學」與「現代文學」兩大部分，古典文學中包含古文名著、駢文辭賦、詩歌詞曲等，現代文學包含散文、小說、新詩等。授課教材由授課老師自行選定編著，以培養學生之文學鑑賞能力暨道德文化涵養為基準；授課老師亦可指定課外閱讀教材，要求學生撰寫讀書報告，藉此提高學生的中文讀寫能力。

Applied Chinese 2 R

The purpose of this course aims to promote students' abilities of reading, thinking, appreciating and writing in Chinese. It is equally divided into Reading part and Writing part. 2.The selecting articles focus on dietary literature. 3. Besides the writing exercise, students should have oral. By this kind of teaching, the students' level in Chinese writing could be promoted

英文 2 必

本課程旨在訓練學生英文聽說讀寫各方面能力，尤其在求職英文方面之實務應用，例如針對求職徵才廣告撰寫履歷和求職信，以及面試常見問答等。

English 2 R

This course aims to familiarize students with the process of applying for a job in English, from finding postings and recognizing common terminology used, to writing a cover letter and resume, all the way to applying basic interview skills.

1. Students will become familiarized with documents that are vitally important in the job application process: (a) job postings (want ads), (b) job applications, (c) resume/CV, and they will gain a considerable amount of knowledge of the job interview process and skills.
2. Students will be able to write a CV/resume, cover letter and through mock job interviews, be able to apply and interview for jobs where English is spoken with a basic foundation of an understanding of the job application/interview process.

體育 1 必

本課程目的是希望以基礎的體能訓練，促進學生健康體能與競技體能，並透過教學的過程增加學生對基本運動技術的認知；更可以以基礎體能測驗，使學生了解各項運動的方法與目的，進而知悉自我之體能狀態以及優缺點，作為日後方展終身運動的依據。

Physical Education 1 R

This course combines basic theory and practice. According to students abilities, they are taught from basic rules and skill analysis to practice. The course aims to develop students interest in this sport so that it may be obliged to them.

系定必、選修中英文課程大綱

一、必修科目 Required Courses

- 植物學概論** 2 必 李鎮宇
本課程之目的在使學生瞭解植物學之基本知識。包括植物細胞、根、莖、葉、花、果實及種子之構造與功能，以及由低等植物至高等植物，包括藻類、菌類、苔蘚類與蕨類等之形態與生活史。
- Botany** 2 R
The purpose of this course is to provide students with basic botanical science. Course contents include the structure and function of plant cells, roots, stems, leaves, flowers, fruits and seeds of higher plants, the morphology and life cycles of lower and higher plants, including algae, fungi, mosses and ferns .
- 植物生理概論** 2 必 趙雲洋
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、呼吸作用等。
- Introduction to Plant Physiology** 2 R
The purpose of this course is to acquaint students with knowledge of basic principles and the application of plant physiology on the agricultural system. The contents include: Introduction of concepts in plant physiology, the process of water absorption and transpiration, absorption and translocation of mineral, nutrient, photosynthesis, respiration.
- 農藝學** 2 必
本課程主要在使學生對農藝作物之生長發育與環境因子之關係及對栽培管理技術有一整體性之瞭解。內容包括介紹農藝作物之分類、生理、生長與環境之關係，以及栽培與管理技術，包括繁殖、施肥、灌溉、病蟲害及採收貯藏等。
- Science of Field Crops** 2 R
The major objectives of this course are to introduce the growth and development of different agronomic crops and their relationships with different environmental factors. Also, the cultural system for each crop including propagation, fertilizing, irrigation, pest management and postharvest techniques etc, will be introduced.
- 園藝學** 2 必
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。
- Introduction to Horticultural Science** 2 R
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.
- 作物栽培原理** 2 必 趙雲洋
本課程目的在於使學生瞭解作物生長發育與環境因子之關係，及栽培管理技術。內容包括作物之起源、分類、生長環境與分佈、栽培制度，以及栽種、施肥、灌溉、雜草、病蟲害及繁殖、採收、貯藏等栽培管理技術。
- Principle of Crop Cultivation** 2 R 趙雲洋
The course is aimed at giving student a thorough understanding of the impacts of environmental factors and culture management technology on plant growth and development. Topics covered include the origin, classification, distribution of crops and their environmental requirements and cultural systems. Propagation, fertilization, irrigation, pest management, disease control, and post-harvest techniques will be introduced about each individual crop.

作物栽培原理實習 2 必 趙雲洋
本課程係透過實地操作，使學生熟悉作物栽培之基本技能，諸如：作物種類及栽培方法之選定、農地整備、堆肥製作、生長管理、病蟲害及雜草防治實務等，使學生具備作物栽培之基本能力。

Principle of Crop Cultivation and Practice 2 R 趙雲洋
The purpose of the course is to familiarize students with the basic farming techniques through hand-on field training, including the selection of crops and culture methods, land tilling, manure preparation, crop management, disease and weed control etc.

植物繁殖技術 2 必 陳幼光
本課程旨在介紹植物繁殖的原理和技術。主要的內容涵蓋植物繁殖的生物學、繁殖的環境、有性繁殖的方法(包括種子的發育、休眠和打破)，以及無性繁殖方法，包括扦插、嫁接、壓條、特化莖或根的繁殖和組織培養等。

Plant Propagation Techniques 2 R
The objective of this course is to introduce the principles and techniques of plant propagation. The main content will cover the biology of plant propagation, propagation environment, sexual propagation (including seed development, seed dormancy and dormancy-breaking techniques) and vegetative propagation methodology, which includes cuttings, grafting, layering, propagation by specialized stems and roots, and tissue culture.

植物繁殖技術實習 1 必 陳幼光
此乃配合植物繁殖技術講授課程之一應用的繁殖課程。學生將可從實際的操作過程中學習到繁殖的技術，如利用種子繁殖的方法、種子發芽率的測試、扦插、嫁接、壓條、特化莖和根繁殖，以及組織培養等。

Practice of Plant Propagation Techniques 1 R
This is an applied propagation course, which accompanies the Plant Propagation lecture. This is a hands-on course, where the students will learn and practice propagation techniques such as propagation from seeds, seed germination tests, cuttings, grafting, layering, propagation using specialized stems and roots, and tissue culture.

專題實務 2 必
本課程由教師輔導學生選定其有興趣之研究題目，學生將以團隊合作方式進行資料蒐集、分析、討論及實驗設計，並將研究結果撰寫報告與海報張貼。

Special Projects 2 R
This course aims to develop students ability in completing research as well as cooperation work. Students will have to work as a group to finish a study with a special topic they choose. A final oral presentation will be held later this year.

農園產業探索與觀摩 3 必 陳幼光
本課程的目的是讓學生透過農園產業參訪的親身見習來學習相關知識。將安排學生實地探索臺灣在地的生產農場和農產公司的企業活動。修課的學生將學習到不同類型相關產業的作業和管理方式。學生參訪每一地點的心得報告將依該地點的學習目標列入部分學期成績的評量。

Agro-Horticultural Industry Exploration and Visitation 3 R
The purpose of this course is to have students learn through first-hand observation by visiting agro-horticultural industries. A tour of production farms and agro-companies in Taiwan will be organized for students to explore industry activities on-site. Participating students will learn the practices and management techniques of various types of related industries. Assessment in-part will be based on a written comprehensive report based on the learning objectives of each site visited.

二、選修科目 Selective Courses

※ 課程科目後加*表示中五學制(高中只讀 5 年)的學生必須加修的課程。

農業氣象學*

2 選 唐琦

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

Agricultural Meteorology

2 E

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

環境生態*

2 選 曾珍

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

Environmental Ecology

2 E

The purpose of this course is to study the basic concepts of ecology. Course contents include topics of ecosystems, organisms and environments, population ecology, community ecology, as well as applied ecology.

有機農業概論

2 選

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

General Discussion of Organic Farming

2 E

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

行銷學實務

2 選

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:行銷之基本觀念、行銷體系與行銷環境、策略性行銷規劃與行銷管理、各種市場與購買者行為分析、市場需要之測定與市場區隔、產品決策、價格決策、溝通與促銷組合決策、通路決策。

Marketing

2 E

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 and Place decision.

農業機械

2 選

本課程內容是使學生瞭解各種農業機械的特性及用途,內容包括農業動力與作業機二部份,農業動力主要介紹發動機、耕耘機,曳引機及電力馬達。作業機則介紹整地播種、灌溉、病蟲害防治、施肥、收穫等機具及農產品處理加工機具,另外其他工程機械在農業上應用的介紹。

Agricultural Machinery Operation

2 E

This course is for students to understand the character and use of all kinds of Farm-machinery. This Farm-machinery course includes two parts: Farm-power and their implements. Farm power introduces engine, power tiller, tractors and electric motor;The implements introduce tillage planting, irrigation, insect and disease

protection, fertilizer and harvesting equipment and agricultural products processing equipment, as well as other machines used in farm-land.

農業機械實習 **1 選**

本實習是讓學生實際瞭解各種農業機械的構造與功能，並學習農機的操作與維護保養。內容包括引擎耕耘機，曳引機，馬達及整地、播種、灌溉、病蟲害防治，施肥、收穫等，農產品處理加工機械及工程機械在農場上的利用。

Practice of Agricultural Machinery Operation **1 E**

This practice is for student to understand the structure and performance of all kinds of farm-machinery. and learn to operate and maintain ,including engine, power-tiller, tractor,electric motor and tillage, planting irrigation, plant protection, fertilization and harvesting of produces and other machines used in farm.

植物保護* **2 選** **曾珍、陳文華**

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

Plant Protection **2 E**

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.

植物保護實習* **2 選** **曾珍、陳文華**

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、防治實驗，以及田間的作物病害蟲診斷與管理方法等。

Practice of Plant Protection **2 E**

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. Realize current status of agricultural industry.

特用作物學 **2 選** **賴宏亮**

本課程目的在培養嗜好作物、糖料作物、纖維作物、油用作物等之生產、改良人才。主要內容在敘述特用作物之意義、用途、成分、性狀、分類、品種、來源、分佈、適應、栽培、管理、收穫、調製、貯藏、改良、範圍及研究方法。

Special Crops Science **2 E**

The objective of this course is to give students more confidence in their ability for producing and improving the recreation crops, sugar crops, fiber crops, and oil crops etc. The main contents of this course will describe the definition, usage, ingredient, characters, classification, cultivar, origin and history, distribution, adaptation, culture, management, harvest, manufacture process, storage, improvement, sort, and study method of special crops.

特用作物學實習 **2 選** **賴宏亮**

本課程共包括：嗜好作物、糖料作物、纖維作物、油用作物等之植株性狀，苗床之準備，播種，苗床管理，定植，田間管理，施肥，病蟲害防治，採收，調製方法，貯藏，產品品評及成分的分析等。

Practice of Special Crops Science **2 E**

The course includes recreation crops, sugar crops, fiber crops, and oil crops etc. on their plant characteristics, seedbed preparation, sowing, seedbed treatment, transplanting, field management, fertilization, control of disease and pest, harvesting, preparation method, storage, tasting of products, and component analysis.

造園學 **2 選** **翁珮怡**

本課程介紹：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。

Landscape Architecture 2 E

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.

造園學實習 1 選 翁珮怡

本實習包含：1.造園設計實務 (1) 園地測量 (2) 繪製設計圖樣 2.造園施工實物 (1) 土工 (2) 木工 (3) 石工 (4) 水電工 3.庭園管理與維護實務 (1) 器具之使用 (2) 樹木植栽之修剪及維 (3) 草皮之管理及維護。

Basic Practices for Landscape Architectur 1 E

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.

土壤與肥料管理* 2 選 林永鴻

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方法。

Soil and Fertilizer 2 E

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.

土壤與肥料管理實習* 1 選 林永鴻

本課程藉由實際操作讓學生對土壤、肥料及兩者與作物生產間的關係有更深刻的印象。實習內容包含：土壤樣品的採集與調製，土壤剖面觀察，土壤總密度與土粒密度的測定，土壤機械分析，田間容水量的測定，土壤 pH 值和石灰需要量的測定，土壤有機質和無機養份的測定，土壤 CEC 的測定，肥料認識與分析，肥料用量實驗，堆肥製作，不同堆肥成熟度對作物生育的影響。

Practice of Soil and Fertilizer 1 E

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

食用作物學 2 選 林資哲

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。

Food Crops Science 2 E

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.

食用作物學實習

1 選 林資哲

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。

Food Crops Science Practice

1 E

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.

農業經營實務*

2 選 陳威臣

本課程主要在使學生除具備農園藝作物栽培之理論與技術外，尚具有新的農、園藝場規劃經營管理技能，以提昇生產與經營效率。因此本課程內容涵蓋農、園藝作物生產與經營類型、經營原則、規劃與設計、生產與環境保護、運銷成本、記帳與財務、營業登記與檢疫法規。此外，本課程亦介紹國外與本國等農企業管理的案例，以使學生具備國際觀與本土化的概念。

Agricultural Enterprise Management Practices

2 E

This course offers students with theory and techniques on the concepts and efficiency of crop cultivation of farm and agribusiness. The topics include types of crop production management, field selection, principles of management, design, crop production and environmental conservation, principles of cultivation and management, cost and transport of marketing, accounting, registration and quarantine rules. In addition, this course will introduce the cases of agribusiness management of Europe, America, Japan and Taiwan in order to offer students with international and native practical experiences.

設施園藝

2 選 鍾興穎

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。

Horticultural Production under Structures

2 E

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.

設施園藝實習

1 選 鍾興穎

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。另外練習栽培水耕蔬菜；實際觀測各種設施架構、培方式和灌溉系統，了解其特色、優缺點和價格。

Practice of Horticultural Production under Structures

1 E

Circulated hydroponic production is the major topic of this course, which includes nutrient solution composing, environmental management and pests control. Projects also content hydroponic vegetables production, greenhouse structure and irrigation system measuring, and evaluating, as well as price estimation of irrigation systems.

食藥用菌菇栽培

2 選 林儒緯

本課程主要在講授有關食藥用菌菇，例如：巴西洋菇、黑木耳、袖珍菇與靈芝等，其形態、構造、

生態及栽培方法。栽培方法包括菌種之分離、純化、太空包培養及栽培管理技術也將討論。

Cultivation of Edible and Medicinal Mushrooms 2 E

This course mainly teaches about edible and medicinal mushrooms, such as almond mushroom, black fungus, oyster mushroom and ling-zh, etc., their morphology, structure, ecology and cultivation methods. Isolation, purification, preparation and cultivation techniques and growth management of strains will also be discussed.

食藥用菌菇栽培實習 1 選 林儒緯

本實習主要在使學生理論與實習相互配合，認識食藥用菌菇之構造，並學習其栽培技術。內容包括菌種之分離、純化、培養與太空包栽培管理技術。

Practice of Cultivation of Edible and Medicinal Mushrooms 1 E

This practice is to acquaint students with the practical operation as well as the theoretical aspects lectured in class. Applied techniques designed are the isolation, purification, and culture of mushroom spawn. The bag cultivation and management technique of mushrooms are also practiced.

蔬菜學 2 選 林儒緯

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。

Olericulture 2 E

This course mainly teaches about edible and medicinal mushrooms, such as almond mushroom, black fungus, oyster mushroom and ling-zh, etc., their morphology, structure, ecology and cultivation methods. Isolation, purification, preparation and cultivation techniques and growth management of strains will also be discussed.

蔬菜學實習 1 選 林儒緯

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。

Practice of Olericulture 1 E

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.

作物營養管理與診斷技術 2 選 林永鴻

本課程最主要是在闡明台灣耕地土壤的一些重要土壤問題及其解決之要領，同時說明作物營養管理的原則與方法，並介紹作物無機營養失調症狀及其診斷技術與改善方法。

Crop Nutrition Management and Diagnostic Techniques 2 E

The course emphasizes the problems of cultivated soil in Taiwan and their amendment methods, the principle and methods of crop nutrition management, symptoms of nutrient disorders, diagnostic techniques and amendment methods.

作物營養管理與診斷技術實習 1 選 林永鴻

本實習主要在使學生認識作物無機營養，包括大量元素及微量元素失調的症狀，以及熟悉作物無機營養：氮、磷、鉀、鈣、鎂、硫、銅、鐵、錳、鋅及硼的診斷技術與分析方法。

Practice of Crop Nutrition Management and Diagnostic Techniques 1 E

The course offers hands-on practices on identifying symptoms of crop nutrient disorders including macro-elements and micro-elements and other diagnostic techniques, especially on plant and soil analysis including N, P, K, Ca, Mg, S, Cu, Fe, Mn, Zn, and B.

果樹學 2 選 蔡尚翰

本課程提供基本果樹生產管理技術，內容包括果樹栽培之環境要素、植株栽培及生理特性，開花結果習性，繁殖方法，育種，果樹栽培管理方法及各種果樹生產模式，並論及台灣果樹產業現況及變遷與未來之發展。

Pomology 2 E

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.

果樹學實習 1 選 蔡尚翰

本實習課程提供果樹學田間實地操作之訓練，包括：果樹之建立與管理、土壤肥料管理、果樹整枝修剪、果苗繁殖及果樹分級、包裝、採收後處理技術，使學生在實習中了解果樹栽培之各種程序。

Practice of Pomology 1 E

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.

草坪利用 2 選 陳威臣

本課程介紹草坪之種類及用途；適用於草坪之溫、熱帶各類草種，及其植株特性與繁殖方法。另，草坪之設計、規劃、整地、栽植、管理、維護、病蟲害種類及其防治方法，均逐一說明。

Turf Management 2 E

The course will introduce different types of turfgrasses and their uses especially those adapted to the temperate and tropical areas. On major turfgrass species, the plant characteristics and propagation techniques will be discussed. Turf establishment and management, design, preparation, maintenance, pest management techniques will also be discussed.

草坪利用實習 1 選 陳威臣

認識草坪、草類、植物學特徵及各類溫、熱帶草坪之草種、植株特性、繁殖方法，並實際讓學生進行草坪之整地、栽植、施肥、割草、通氣操作、病蟲害認知與防治等，並配合實地參觀以加深印象。

Practice of Turf Management 1 E

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

花卉學 2 選 黃倉海

本課程主要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、分類、產業概況、花卉應用、育種、繁殖、無土介質栽培、栽培與管理、環境因子的影響、產期調節等。

Floriculture 2 E

The objective of this course is to introduce floriculture related sciences, technologies, and businesses. The topics are including definition, classification, industry overviews, floral utilization, breeding, propagation, soilless cultivation, cultivation and management technology, and regulation of production period.

花卉學實習 1 選 黃倉海

本課程以實際操作訓練學生花卉作物之栽培管理技術。實習單元共有：穴盤育苗、種子處理、定植

及摘心技術、田間及盆栽作物的栽培管理、草花辨認及花卉作物繁殖技術等。

Practice of Floriculture 1 E

The purpose of this course is trained students the cultivation and management techniques of flower crops. The internship units are including plug production, seed treatment, planting and pinch techniques, cultivation and management of outdoor plants and potted crops, identification of flower crops and propagation techniques.

智慧農業概論 2 選 趙雲洋、鍾興穎

農業已從傳統農業轉型成智慧農業，有必要讓學生瞭解智慧農業技術的方法。本課程將以田間與設施兩個面向開始介紹，課程內容囊括：智慧設施、感測器、無人機、智慧灌溉、AI 產量預測、大數據、非破壞性檢測...等科技技術應用於農業。

Introduction to Smart Agriculture 2 E

Agriculture has transformed from traditional agriculture to intelligent agriculture, and it is necessary for students to understand the methods of intelligent agricultural technology. This course will start with two aspects of field and facilities. The course content includes: smart greenhouse, sensors, drones, smart irrigation, AI yield prediction, big data, non-destructive detection... and other technologies applied to agriculture.

農園產品處理學 2 選 梁佑慎

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，以及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。

Postharvest Technology of Horticultural Products 2 E

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. 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.

農園產品處理學實習 1 選 梁佑慎

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。

Practice of Postharvest Technology of Horticultural Products 1 E

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.

農產品加工學 2 選 食品系

本課程包含各類農產品加工技術之簡介，並說明農產品加工過程中之理化變化、產品保存及品質檢測技術與新產品開發流程。並藉由實習操作過程，讓學生了解加工流程、生產成本以及產品品質管控重點。

Agricultural Product Processing 2 E

This course includes an introduction of agricultural product processing technologies, and explains the physical and chemical properties in agricultural product processing, preservation and quality inspection techniques and new product development processes. And through the practical operation process, students can understand the process of agricultural product processing, production cost and product quality control key points.

作物改良 3 選 輪授

介紹作物改良主要介紹無性繁殖作物、自交、異交作物育種改良原理及方法，熟悉各種不同之育種理論及技術。講授內容計有以下之章節：緒論：介紹育種史及育種之重要性、作物育種之遺傳學基礎、自交不和合及雄不稔性、引種法、純系育種法、選拔育種法、雜交育種法、回交育種法、雜種優勢(F1)育種技術、抗病抗蟲育種、遠緣雜交、誘變育種、分子育種在農園作物上之應用。

Crop Improvement

3 E

The goals of this course are to acquaint students with knowledge of principles and techniques used in crop breeding and improvement. Course contents include: introduction: history and importance of crop breeding, genetic background of breeding, self-incompatibility and male sterility, crop introduction, pure-line breeding, selection, hybridization, back cross, F1 hybrid breeding, breeding for disease and insect resistance, interspecific hybridizations, mutation breeding and molecular breeding.

作物改良實習

1 選

陳威臣

主要介紹各農園藝作物之改良方法及育種技術，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。

Practice of Crop Improvement

1 E

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...

園藝作物產期調節

2 選

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，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。

Forcing Culture of Horticultural Crops

2 E

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.

傳閱附件 3-----111 學年度第 2 學期教師申請開授通識課程大綱

111 學年度第 2 學期教師申請開授通識課程中英文課程大綱

1. 電影與文學

Film and Literature

中、英文課程綱要：

電影的核心是文學，電影可說是影像化的文學作品，自電影發明以來，電影與文學即存在密切的關係，文學不僅是電影的前身，也為電影蓄積創作能量。本課程協助同學認識電影產業，以及影像創作與文學創作的異同，並廣泛認識多部成功的改編作品範例，培養同學們改編的敏銳度，洞悉市場趨勢，學習撰寫電影提案企劃，嘗試將文學作品開發成為一部可拍攝的電影。必要時邀請業界專家蒞臨課堂，幫助瞭解影視改編的工作實務。

Literature is the core of film. It can be said that film is the visualization of literary works. Since the invention of film, there has been a close relationship between film and literature. Literature is not only the predecessor of film, but also accumulate the creative energy for film. This course can help students understand the film industry, as well as the similarities and differences between video creation and literary creation, and some examples of successful adaptations. Cultivate students' sensitivity in adapting scripts and market trends. Learn to write a movie proposal. Try to develop the literary work into filmable script. If necessary, invite experts come to further explain the work of adapting in screenplay.

2. 民法概論

Outline of Civil Law

中、英文課程綱要：

本學期課程將著重於使學生理解民事實體法的理論與實務，並且學習如何主張民事法上之請求權基礎。課程內容將包括：請求權基礎理論、民法總則、債篇總論、債篇各論、物權法、親屬法與繼承法。除了民事法相關條文外，將特別著重於學者見解與法院之民事判決。

This course is designed to familiarize you with the theory and practice of Civil Law, as well as how to enforce its protection. The course will lead the students to go through the Theory of Claim Ground, General Principles, General Provisions of Obligations, Particular Kinds of Obligations, Rights in Rem, Family Law, Succession Law. We will focus our inquiry on the text of the above laws, scholarly work and the Courts' civil law cases.

3. 刑法概論

Introduction to Green Energy Technology

中、英文課程綱要：

本學期課程將著重於使學生理解刑事實體法的理論與實務，並且學習如何正確的作成符合刑事法之主張。課程內容將綜覽刑法總則與刑法分則，包括犯罪構成

要件、違法性、有責性、犯罪參與、競合理論以及各種刑事犯罪。除了刑法相關條文外，將特別著重於學者見解與法院之刑事判決。

This course is designed to familiarize you with the theory and practice of Criminal Law, as well as how to enforce its protection. The course will lead the students to go through General Provisions and Specific Offenses, including Elements of Crime, Criminal Defenses, Culpability, Principal Offenders and Joint Offenders, Combined Punishment, and all kinds of offenses. We will focus our inquiry on the text of the Criminal Law, scholarly work and the Courts' criminal law cases.

4. 國際大局觀-東亞的地緣政治

The big picture: the geopolitics of East Asia

中、英文課程綱要：

本課程旨在培養學生的國際大局觀。烏俄戰爭、台海極度緊張的關係，以及歷時已久的中、美貿易戰，在在顯現地緣政治是主導國際政治、經貿局勢的關鍵因素。台灣所謂的護國神山---半導體產業的龍頭--台積電，於 2022 年首度徵求具「政治經濟學」相關領域博士學位的「商業情報分析師」，顯示地緣政治風險不再只是政府與學術界所應關切的議題，生產製造業、企業界，甚至個人都應對此高度重視，因為這與我們的日常生活密切相關。而什麼是「地緣政治」？是這門課的介紹重點。

循此，身處朝鮮半島、南海、中國大國崛起的中國夢，以及台海兩岸等東亞地緣政治高度風險之中的我們，有深入瞭解東亞地區的地緣政治的必要性。對此，本校學子身為國內技職學校中優秀的年輕一代如能在求學階段即對此有所探究，在具前瞻性的國際大局觀的訓練下，以宏觀、國際觀的巨視胸懷進入職場，將有助於未來更廣闊的職涯發展。

This course aims to cultivate students' international big picture thinking.

The Ukrainian-Russian War, the extremely tense relations across the Taiwan Strait, and the long-running trade war between China and the United States indicate that geopolitics is a key factor that dominates the international political, economic and trade situations. In 2022, Taiwan Semiconductor Manufacturing Co., the leader of Taiwan's semiconductor industry, sought for the first time a "business intelligence analyst" with a PhD in the field of "political economy", indicating that geopolitical risks are no longer a concern of the government and academia, but should be taken seriously by manufacturers, enterprises and even individuals. Because it is closely related to our daily life. And what is "geopolitics"? This is the focus of the course.

Therefore, it is necessary for us to have an in-depth understanding of geopolitics in East Asia as we are in the midst of high geopolitical risks in the Korean Peninsula, the South China Sea, the Chinese dream of the rise of China as a great power, and the two sides of the Taiwan Strait. In this regard, if the students of our school, as the outstanding young generation in the domestic technical and vocational schools, can

explore this during their study period, and enter the workplace with a macro and international perspective under the training of a forward-looking international big picture thinking, it will be conducive to a broader career development in the future.

5. 國際關係(全英語授課) International Relations

This course introduces some of the major theoretical perspectives for studying how states and peoples behave and interact. The course required no prior background in international relations. Students will acquire some basic analytical tools for understanding and explaining a wide array of international phenomena, including wars, environmental degradation, alliance behavior, international norms, international conflicts, geopolitics, international political economy and others. The goal is to help students understand why we observe certain issues in the international arena, and to help you devise policy responses that are consistent with international realities and thus more likely to succeed.

6. 森林特產物與生活 Forest special products and life

中、英文課程綱要：

本課程開設主要目的為使學生了解台灣地區森林覆蓋面積高達 219.7 萬公頃，覆蓋率 60.71%，在此森林中，林下擁有資源十分豐富的特產物。當今政府林政單位之林業政策正推動林下經濟與促進人體健康及療癒之際，食農教育此刻更凸顯其重要性。本課程首先介紹台灣森林資源的面積與分布後，依序介紹森林特產物的分類與各分類的各論，以提供學生了解來自天然的建康產物與人體健康的關係。

The main purpose of this course is to enable students to understand that the forest coverage area in Taiwan is as high as 2.197 million hectares, with a coverage rate of 60.71%. In this forest, there are very rich special products under the forest. At a time when the forestry policy of the government's forestry administration is promoting the under-forest economy and promoting the healing of human health, the importance of food and agriculture education is even more prominent at this moment. This course first introduces the area and distribution of forest resources in Taiwan, and then introduces the classification of forest special products and of each classification in order to provide students with an understanding of the relationship between natural health products and human health.

中、英文課程綱要：

本課程之教學內容重點在以下五方面：

1. 介紹台灣森林資源(包含主產物與特產物)的面積與分布。
2. 評析台灣發展林下經濟的優勢與機會
3. 了解台灣森林特產物的分類與各分類原料或產品特性。

4. 學習來自天然森林特產物生態材料與生活的關連性。
5. 天然森林特產物生態材料與健康療癒。

Course description:

There are three main sections of this class:

1. Introduce the area and distribution of Taiwan's forest resources (including main products and special products).
2. Understand the classification of Taiwan's forest special products and the characteristics of each classification of raw materials or products.
3. Learn about the relationship between forest specialties and healthy living.
4. Learn the relevance of ecological materials from natural forest products and life.
5. Natural forest specialty ecological materials and health healing.

7. 能源科技與永續發展

Energy Technology and Sustainable Development

中、英文課程綱要：

人類文明不斷進步 所需要之能源也不斷增加 但要能永續發展則必須更多跨領域的考量 例如傳統的石化能源雖然並未耗盡 然其所以發之副作用 諸如增加碳排 造成的氣候變遷 對環境生態有巨大的衝擊 而目前所開發之再生綠色能源 雖然較為環保 但由於能量密度低 穩定性差以及產地與使用端距離遙遠等問題 也很難完全取代傳統能源 近年來世界各國為了克服此瓶頸 各種創新科技不斷發展 無論在新能源的採集 儲存 輸送 需有突破性的發展 同時傳統石化能源則走出既定腳色 而逐漸開發成各種有利國計民生的新材料 再者各式節能技術及循環經濟的概念也不斷更新來彌補能源之不足 諸如以上所述 如何在發展能源科技時 與永續發展密切結合 是當務之急 也是全民必備之新觀念

本課能將分為四大部分 針對未來能源之開發 儲存 運輸節能等科技 做一個宏觀且深入淺出之介紹 讓同學們藉由了解各式能源的本質 及在科技發展下 各式能源利用方法及應用場域的未來趨勢及限制 來建立其正確的觀念 進而反思如何融合科技與人文 讓人類文明的發展與永續的願景能達成平衡

The energy required by the continuous progress of human civilization continues to increase, but to achieve sustainable development, more cross-disciplinary considerations are necessary. For example, although traditional fossil energy has not been exhausted, its side effects such as increased carbon emissions and climate change In turn, it will have a huge impact on the environment and ecology. Although the renewable green energy currently developed is relatively environmentally friendly, it is difficult to completely replace traditional energy due to problems such as low energy density, poor stability, and the long distance between the production area and the end of use. In recent years, countries around the world have tried to overcome this bottleneck. Various innovative technologies continue to develop, regardless of the need for breakthrough development in the collection, storage and transportation of new energy. At the same time, traditional petrochemical energy has stepped out of its established role and gradually developed into various new materials that are beneficial to the national economy and people's livelihood. Moreover, various energy-saving technologies and the concept of circular economy are constantly updated to

make up for the lack of energy. Therefore, how to develop energy technology closely with sustainable development? Combination is an urgent task and a new concept that the whole people must have.

This class can be divided into four parts. It will give a macro and simple introduction to the future energy development, storage, transportation, energy saving and other technologies. Let students establish their correct concepts by understanding the nature of various energy sources and the future trends and limitations of various energy utilization methods and application fields under the development of science and technology, and then reflect on how to integrate technology and humanities to make the development of human civilization and sustainability vision strikes a balance.