# 108 學年度第 2 學期第 1 次 校課程委員會議

# 提案傳閱附件　目錄

傳閱附件 1-1--本校各學院所屬各系(所)課程中英文摘要-農學院

# 各系(所)中心新增課程中英文摘要

## 一、 農學院

### (一) 農園生產系：

**無人載具田間管理實習　　1　　選**

本課程主要介紹無人機、植保機的功能及操作植保機時作業需注意事項，並進行田區植保機噴藥作業與田間管理，及作業完畢後植保機各項維修與保養。在課程中也會介紹無毒農業資材的種類及防治原理。

**Unmanned vehicle field management practice　1 E**

This course introduces the functions of drones and agricultural protection drones and the matters needing attention when operating agricultural protection drones, and is engaged in field agricultural protection drones spraying operations and field management, and repair and maintenance of agricultural protection drones after the operation is completed. The types of non-toxic agricultural materials and prevention principles will also be introduced in the course.

### (二) 食品科學系：

**新興食品加工技術　　3　　選**

近年來，消費者對於食品品質，安全和方便性的要求逐漸提升。因此，食品產業需要精進傳統加工技術並尋找更佳的替代方案。目前已有幾種新興的食品加工技術被應用於食品加工，而這些相關技術的創新概念亦在不斷發展。因此必須對新興食品加工技術的原理、機制和潛在應用有所了解，才能將相關技術多元應用在生產流程中。另外此課程亦可提高學生的創新能力，及運用新興食品加工技術，解決與傳統食品加工技術之相關問題。

本課程結束，學生應具備以下能力：

1.能解釋新興食品加工技術之重要性。

2.能解釋包括電阻加熱和射頻加熱在內的新興熱處理技術的基本原理，涉及的機制和潛在應用。

3.能解釋新興的非熱加工技術的基本原理，涉及的機制和潛在應用，包括中等電場，脈衝電場，冷電漿和高壓加工。

4.能了解每種技術的主要優點和局限性

5.能解釋食品工業中新興加工技術的現狀

6.能討論各種新興加工技術在食品行業中的潛在應用

7.能夠基於科學原理提出，如何運用新興加工技術的想法。

課程大綱：

1.熱（例如，射頻加熱和電阻加熱）和非熱（例如，中等電場，脈衝電場，冷電漿和高壓加工）加工技術。

2.加工流程所涉及的機制以及這些技術如何對食品工業有所助益。

3.這些新食品加工技術於產業中之應用。

**Emerging Food Processing Technologies　3　E**

Nowadays, food consumers are more demanding for high-quality, safe, and convenience foods. Hence, the food industry needs to improve the conventional processing technology and to find better. In this regard, several emerging food processing technologies have been proposed and some of their

potential applications have been studied around the world.

Innovative and novel concepts related to these technologies are also evolving. We must have an understanding of the principles, mechanisms, and potential applications of emerging food processing technologies in order to diversify relevant technologies into production processes. This course aims to promote students' innovative ability/creativity to establish new food processing techniques and to address the issues associated with traditional food processing technologies.

At the end of this course, students should have the following abilities:

1.Can explain the importance of emerging food processing technologies.

2.Can explain the principles, mechanisms and potential applications of emerging thermal process technologies including ohmic heating and radiofrequency heating.

3.Be able to explain the fundamentals, mechanisms, and potential applications of emerging non-thermal process technologies including moderate electric field, pulsed electric fields, cold plasma, and high-pressure processing.

4.Be able to understand the main advantages and limitations of each technology.

5.Can explain the current status of emerging processing technology in the food industry

6.Can discuss the potential applications of various emerging processing technology in the food industry

7.Can put forward ideas on how to use emerging processing technologies based on scientific principles.

Course outline:

1.The fundamentals of thermal (e.g. radiofrequency heating and ohmic heating) and non-thermal (e.g. moderate electric fields, pulsed electric fields, cold plasma, and high-pressure processing) emerging food processing technologies.

2.The mechanisms involved in these processes and how these technologies can be beneficial for the food industry.

3.Recent advances in the applications of these new food processing technologies..

**進階食品工廠設計　　3　　選**

食品工廠設計涵蓋化學工程，工業設計，經濟學和食品加工等領域相關知識。經適當設計的食品加工廠可大幅提升生產流程效率，並節省生產成本、運輸成本，倉儲成本以及減少浪費等，為食品產業永續經營的關鍵要素之一。

課程結束，學生應能具備以下能力：

1.分析食品工廠位址選擇之適切性。

2.分析食品工廠中各種建築物與空間配置

3.了解物料流和輸送系統的常見類型及其優缺點

4.了解適合用於食品加工設備的材質。

5.為食品工廠設置適當的照明系統

6.了解清潔食品工廠的相關注意事項

7.解決食品加工廠設計上的問題，提出改進方案。

課程大綱：

1.其他國內外相關標準及規範

2.食品工廠設計之重要性

3.廠房土地和建築物之規劃

4.生產線配置，動線規劃，物料流和輸送系統

5.食品加工設備材質特性

6.照明設備在食品工廠設計中之應用
7.食品工廠之清潔與。

**Advanced Food Plant Design 3 E**

Food factory design covers knowledge in the fields of chemical engineering, industrial design, economics, and food processing. A properly designed food processing plant can greatly improve the production efficiency and reduce the costs related to production, transportation, storage, and waste disposal. It is one of the key elements of sustainable food industry operations.

By the end of this course, the students should be able to:

1.Analyze the suitability of a location for the food factory
2.Analyze the arrangements of various buildings and space configuration in a food plant
3.Understand common types of material flows and conveyor systems and their advantages and disadvantages
4.Learn about the materials that are suitable for use in food processing equipment.
5.Set up proper lighting systems for food factories
6.Understand the relevant considerations for cleaning a food factory
7.Solve problems in food processing plant design and propose improvement plans

Course Outline:

1. Some of the relevant national and international standards and regulations
2. The importance of food plant design.
3. Considerations for the land and buildings of the food factory.
4. The importance of appropriate material flow and conveyor systems
5. Characteristics of materials used in the construction of food processing equipment
6. The applications of lighting engineering in designing a food factory
7. Cleaning of food factories.

**包裝設計與數位行銷 2 選**

本課程旨在介紹商品的包裝設計，瞭解如何以顧客的特質（消費者的行為）為基礎，將企業形象、商品特色設計於包裝上，以促進商業活動，學生將同時學習如何設計包裝外觀與結構、材質的表現方式，以及帶領同學認識數位科技（含網路）對行銷傳播造成的變革，以及廣告、公關、媒體服務、網路整合服務代理商等產業如何透過數位行銷傳播來傳遞商品資訊給予消費者。

本課程將提供學生了解商品包裝設計，課程內容涵蓋：1.包裝設計的基本介紹 2.包裝設計的基本材料和製作程序 3.包裝造形的瞭解 4.包裝策略的介紹 5.包裝工業、顧客、設計者三者之間的角色和責任 6.運用數位行銷傳播來傳遞商品資訊給予消費者的方法。

**Package Design and Digital Marketing 2 E**

This course aims to introduce the packaging design of products, and understand how to design the corporate image and product characteristics on the packaging based on the characteristics of the customer (consumer behavior) to promote business activities. Students will also learn how to design the appearance of packaging and structure, material expression, and guide students to understand the changes that digital technology (including the Internet) has caused to marketing communications, and how advertising, public relations, media services, and network integration service agencies and other industries can use digital

marketing communications to convey product information to consumers. This course will provide students with an understanding of product packaging design. The content of the course covers: 1. Basic introduction to packaging design; 2. Basic materials and production procedures for packaging design; 3. Understanding of packaging shape; 4. Introduction to packaging strategy 5. Roles and Responsibilities among packaging industry, customers and designers; 6. The methods of digital marketing communications to deliver product information to consumers

**食農教育特論　　2　　選**

本課程邀請產官學研專家針對農業、飲食和環境教育三個方面，提供在地農產特色、促進營養健康、提高飲食安全、保障糧食自給率、永續性農業生產與消費知識與經驗，以培育學生了解食農教育的內容與重要性，並建立正確食農產業的價值觀。

**Special Topics in Agri-food Education　　2　　E**

In this course, expert speakers from industry, government, university or institute will be invited to share their knowledge and experiences, through aspects of agricultural, dietetic, and environmental educations, on local agricultural characteristics, nutrition and health promotion, dietary safety improvement, food self-sufficiency security and sustainable agricultural production and consumption. One of objectives is to teach students to understand the content and importance of agri-food education, and to establish the correct values of agri-food industry.

**食品安全與食品管制系統特論　　2　　選**

本課程邀請產官學研專家針對品質管制系統方便，傳授食品法規、GHP、HACCP、製程管制、線上監測等技術，包括計畫書建立、程序書撰寫、施行步驟、內部稽核、矯正措施及實務演練等，讓學生充分認識及熟練食品危害分析與重點管制系統，以強化學生進入職場從事食品品質保證的能力。

**Special Topics in Food Safety and Quality Control System　　2　E**

In this course, expert speakers from industry, government, university or institute will be invited to share their knowledge and experiences on food law, GHP, HACCP, process control measures, on-line monitoring, etc., including developing HACCP plan, documentation, implementation, internal auditing, corrective actions, practice and exercise, etc. One of objectives is to allow students to apprehend and master the Hazard Analysis & Critical Control Points system, and promote their proficiency of food safety assurance as they working in industry.

**食品認證與標章特論　　2　　選**

為了確認加工食品、農作實務、成份及製備程序符合特定標準，當今有許多食品已經獲得相對應的單位認證，以便讓消費者安心，且提供消費者快速及容易辨認他們尋找的產品。本課程邀請產官學研專家傳授各式食品認證與標章現況與重要性，包括：台灣優良食品(TQF)認證、Global GAP 認證、清真食品認證、農產品產銷履歷認證等，讓學生充分認識及熟練食品認證與標章系統，以強化學生進入職場從事食品認證與標章的應用能力。

## Special Topics in Food Certification and Label 2 E

n order to assure the quality of processed foods, farming practices, ingredients and preparation procedures meet a specific standard, many food products are now certified by respected organizations to put consumers at ease and provide fast, easy identification of the products they are looking for. In this course, expert speakers from industry, government, university or institute will be invited to share their knowledge and experiences on current situation and importance of various food certifications and labels, including Taiwan Quality Food (TQF) certification, Global GAP certification, Hala Food certification, Traceable Agricultural Product certification, etc. One of objectives is to allow students to apprehend and master the food certifications and labels, and promote their application ability of food certifications and labels as they are working in industry.

## 精密儀器檢測技術特論 2 選

本課程邀請產官學研專家針對精密儀器的原理、操作技巧與食安檢測應用三個方面，提供各式食安樣品萃取、分離、層析、檢測等知識與經驗，以培育學生了解使用高階精密儀器的技術與應用，並提升學員進入職場為食安把關的能力。

## Special Topics in Precision Instrument and Measurement Techniques 2 E

In this course, invited expert speakers from industry, government, university or institute will share their knowledge and experiences, through aspects of principles, operation skills and food safety applications of precision instrument, on extraction, isolation, chromatography and detection of various food safety samples. One of objectives is to teach students to understand the techniques and applications of using high-end precision instrument, and to become a competent gatekeeper for food safety in industry.

## 農食材加工檢驗特論與實作 2 選

本課程聘請不同農食材加工與檢驗專長之學者專家，講授食材加工與檢驗產業之最新研究與發展，其中包括虱目魚丸製作及過敏原檢測、鳳梨乾製作及一般成分分析、蔬果與穀類重金屬檢測、農作物農藥殘留檢測等，並依照授課內容，提供學生實作實習或業界參訪之活動，讓學生能將課堂所習之食材加工與檢驗知識與技術，實際動手應用於食材加工與檢驗操作或親身體驗食材加工與檢驗產業的運作。

## Special Topics and Practices in Agri-food Processing and Analysis 2 E

This course will invite various scholars or specialists with different specialties in agri-food processing and analysis to teach the most recent research and development of agri-food processing and analysis industry. The topics may include, but not limit to, production and antigen analysis of milkfish balls, production and component analysis of dried pineapple, heavy metal analysis of vegetables, fruits and cereals, pesticide residue analysis of crops, etc. In addition to lecture in the classroom, the lecturer will also provide students with hand-on practice in the lab or field trip to visit agri-food processing and analysis industry. This course will allow students to utilize the knowledge and techniques learned in classroom for actually hand-on application of agri-food processing and analysis in lab or to visit agri-food processing and analysis industry personally to observe and experience different technologies in agri-food processing and analysis industry.

**食品安全與管理　　2　　選**

本課程整合食品科技與管理實務，導入食品安全之最新觀念，講授食品衛生與安全基礎知識、食品原料、製程及物流等管理，及食品衛生標準與安全容許量制定。本課程除講授現代食品檢測技術之概念、風險評估之應用及食品供應鏈與產銷體系管理之發展。本課程亦包含 WTO 協定及區域整合下之食安管理、近年國際間重大食品安全事件研析及主要貿易夥伴之食安管理發展等。經由此課程，可提升學員在食安管理之專業知識與實務能力。

**Food Safety Management　　2　　E**

This course introduces the new concepts of food safety, fundamental knowledge on food hygiene and safety, management for food materials, manufacturing and logistics, and establishing procedure for food standards and maximum residue levels. This course provides the modern food testing technology, the application of risk assessment, the development of food supply chain, production and marketing management. This course also includes international food safety management under WTO Agreements and regional integration, recent global food safety incidents and development of food safety management in major trading partners. Participants are able to enhance their professional knowledge and capability in practical food safety management from this course

**食品國際行銷　　2　　選**

本課程整合管理學院行銷學系及生物產業管理研究所師資，目標為強化學員對食品國際行銷策略與發展有所瞭解，並提升學員對國際食品行銷市場之分析能力。課程內容涵蓋食品市場策略行銷、食品消費者價值與行為分析、國際外部環境對食品市場分析、食品國際競爭策略理論分析、食品與服務策略發展分析、食品品牌策略分析、食品品牌訂價與促銷策略分析、食品國際通路策略分析、食品國際通路之關係行銷及多場食品國際行銷實務分享等。

**International marketing of food industry　　2　　E**

The course integrates knowledge of the faculty of the marketing department of College of Management and Graduate Institute of Bio-Industry Management at the National Chung Hsing University. The course will strengthen the understanding of food international marketing strategy and development and enhance the market analysis abilities of food international marketing. The course contents includes strategic marketing of food market, food value chain analysis and consumer behavior, international external environment and food market analysis, food competitive strategic theory and analysis, food and service strategy analysis, food branding strategies, food branding pricing and promotion strategies, food international channel, food international distribution of relationship marketing, and food seminar in practice.

**(三) 食品科學系科技農業組：**

**產業實習　　8　必**

本課程係透過農場實地操作，使學生熟悉農場生產、加工、銷售等之基本技能，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、防治及畜牧場的管理實務等，使學生具備農場經營管理(產、製、銷)之基本全備能力，以建立學生對未來從事農業所需知識技能的最好準備。

**Industry Intership　　8　R**

Students learn the basic farming techniques through field training, such as the selection of crops and culture methods, land and manure preparation, crop management, disease and weed control etc. Students will also enrich their knowledge in clean culture,management and market.

## (四) 科技農業學士學位學程：

**農業西班牙文　　2　選　　彭劭于**

全世界有 21 個國家以西班牙文為官方語言，以母語而言，西班牙文為全世界第二大語言，於聯合國及 WTO 等世界組織將西班牙文視為正式官方語言。本課程透過訓練學生西班牙文文法、字彙、拼寫與口說以習得教導中美洲、南美洲等國家當地居民農業技術與管理之能力。此課程將使學生具備西班牙文溝通與文化素養及跨文化視野與世界觀。且能具備第二外國語與國際探索能力，使學生將來有機會加入農業技術團或外交部駐外人員或相關農業產業外派前往中、南美洲等國家協助當地居民農業相關技術之能力。

**Agriculture Spanish　　2　E**

Spanish is the official language in 21 countries around the world. In terms of mother tongue, Spanish is the second largest language in the world. Furthermore, the United Nations and WTO and other world organizations officially regarded Spanish as the official language. This course is through Spanish grammar, vocabulary, spelling, and conversation to train students the capabilities of agriculture related techniques to teach local residents in Central and South America. This course is able to equip students with Spanish communication and cultural literacy and cross-cultural vision and worldview. It also enable students to acquire a second foreign language and international exploration, so that students are capable of having the opportunity to join the Agricultural Technology mission or Foreign Ministry or agricultural related industry to travel to Central and South America to assist local residents in agricultural-related technologies.

**經濟動物繁殖學　　2　選　　彭劭于**

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。

**Reproduction of Farm Animal　　2　E**

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.

**經濟動物繁殖學實習　　1　選　　彭劭于**

本實習之目的在配合「經濟動物繁殖學」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。

**Practice of Reproductive of Farm Animal　　1　E**

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.

**產業實習　　9　必**

本課程係透過農場實地操作，使學生熟悉農場生產、加工、銷售等之基本技能，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、防治及畜牧場的管理實務等，使學生具備農場經營管理(產、製、銷)之基本全備能力，以建立學生對未來從事農業所需知識技能的最好準備。

**Industry Intership　　9　R**

Students learn the basic farming techniques through field training, such as the selection of crops and culture methods, land and manure preparation, crop management, disease and weed control etc. Students will also enrich their knowledge in clean culture,management and market.

傳閱附件 1-2--本校各學院所屬各系(所)課程中英文摘要-工學院

## 二、 工學院

### (一)土木工程系：

**生態工程　　3　選　　李錦育**

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。

**Ecological Engineering　　3　E　　Chin-Yu, Lee**

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.

**坡地水土保持規劃與工程設計　　3　選　　李錦育**

台灣已朝向山坡地大量土地開發與利用，永續且安全利用山坡地為國土利用重要之一環。本課程旨在針對坡地合理之開發進行分析與實施水土保持規劃；為確保坡地穩定及安全，再由水理分析方法與力學理論分析予以設計適宜之水土保持工程設施。使學生具備坡地開發利用時之水土保持規劃方法與適宜之水土保持工程設計能力。

**Soil and Water Conservation Planning and Engineering Design on Slopeland　　3　E　　Chin-Yu, Lee**

Taiwan has been facing the slopeland development and utilization. Sustainable and safe use the slopeland is important in this country. This course focuses on the analytical and planning methods on hillside development reasonably. 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 slopeland. Meanwhile to design appropriate soil and water conservation engineering is the major purpose in this course

**土壤動力學　　3　選　　謝啟萬、徐文信**

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。

**Dynamics of Soils and Foundations　　3　E　　Chi-Wan, Hsieh 、Wen-Shinn, Shyu**

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.

**結構動力學　　3　選　　柯亭帆**

本課程先各種不振動有關的來源介紹起，接著逐步分析一般結構物如房、橋樑、柱、板等動力反應。探討之項目包含有單自由度系統進而至任意自由度系統運動方程式之推導，並且利用和式技巧如矩陣循環法、雷利原理、雷利-利茲法、並和電腦配合來求得不同受力情況下之解答，最後從能量的觀念，並以漢彌敦原理評估航空太空計劃中相關結構體

之運動特性。

**Dynamics of Structures　　3　E　　Tien-Fuan, Kerh**

Starting from various sources related to the behaviors of vibration, the dynamic responses of building, beam, column, and plate are detailly analyzed in this course. The illustrating topics cover derivation of motion equations for single-degree-of-freedom, system, multi-degree-of-freedom system, and continuous system. Furthermore, techniques such as matrix iteration, Rayleigh's principle, and Rayleigh-Ritz method with computer works are used to solve the governing equations under different excitations. Finally, the energy concept with Hamilton's principle is introduced for evaluating the characteristics of structural motion in aerospace projects.

## (二) 機械工程系：

**機電整合系統實務　　3　選**

1.熟悉機電整合系統的軟硬體組成架構。
2.熟悉機電整合系統的基本原理與應用。
3.熟悉機電整合系統的控制技術與設計方法。

**Practice of Mechatronics System　　3　E**

1. Familiar with the hardware and software composition of mechatronics system.
2. Familiar with the basic principles and applications of mechatronics system.
3. Familiar with the control technology and design methods of mechatronics system.

**多軸複合加工　　3　選**

多軸複合加工技術為現今機械工業的主力。本課程主旨為多軸複合加工技術，課程內容包含五軸加工機的 CNC 控制器技術、五軸 CAM 技術、五軸切削加工技術與五軸 CNC 控制器的示範與實習課程。

**Multi-axis and Multi-tasking Machining　　3　E**

Multi-axis and multi-tasking machining technology is the main force of today's machinery industry. The purpose of this course is to introduce multi-axis and multi-tasking machining technology , the topics cover five-axis CNC controller, five-axis CAM technology, five-axis machining technology and demonstration and practical course of five-axis CNC controller.

**產業實務實習　　1　選**

此課程幫助學生瞭解公司實務運作，畢業後除能學以致用外，更能順利適應工作環境。

**Industry Internship　　1　E**

The course mainly make the students know the procedure of factory and understand the true work environment before graduation.

## (三) 生物機電工程系：

**數位系統設計及應用　　3　選　　楊正輝**

本課程之教學目標在促使學生瞭解數位系統相關的基本知識，元件認識及使用，設計流程，及實務應用實現。課程內容包括數字系統及轉換、布林代數、卡諾圖、組合邏輯元件及設計、多工及解多工器、序向邏輯元件及設計、計數器及暫存器設計、狀態機設計、混合型系統、系統除錯與功能驗證、應用實例實現與探討。

**Digital System Design and Applications 3 E Yang Cheng-Huei**

The teaching objective of this course is to promote students to understand the basic knowledge related to digital systems, components recognition and use, design processes, and practical applications. Course content includes numerical systems and conversions, Bollean Algebra, Karnaugh maps, combinational logic components and design, multiplexer and demultiplexer, sequential logic components and design, counter and register design, state machine design, hybrid system design, system debugging and function verification, application examples implememtation and discussions.

## (四) 先進材料學士學位學程：

**物聯網感測器 3 選 李佳言**

本課程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，使學生瞭解設備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、載具感測器。

**Micro Sensors of IoT 3 E 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 equipment, the sensor fabrication and the sensor business. Utilizing the knowledgement of commercial sensor materials and equipment, 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.

**電子顯微鏡學 3 選 林鉉凱**

本課程讓學生了解掃描式電子顯微鏡及成分分析之原理及其應用，並安排示範操作，讓學生充分了解各項設備的功能，進而有深刻認識。授課內容為顯微鏡之結構及其原理、X射線之原理及應用。

**Scanning Electron Microscopy 3 E Lin Hsuan-Kai**

The aim of this course is to acquaint the students with the principles of scanning electron microscopy (SEM) and energy dispersive X-ray spectrometer (EDS). The course also arranges the practical sessions to the students in order to fully understand the functions in our system. This course includes the principle and structure of SEM, and qualitative X-ray analysis in our equipment.

**軟性電子製程技術 3 選 盧威華、林鉉凱**

本課程主要介紹軟性電子製程技術，就軟性電子的特點說明市場與應用趨勢，其授課內容包括薄膜沉積、微影蝕刻、雷射原理、電極圖案化、捲對捲傳輸與先進封裝等製程技術與設備，並舉出軟性電子應用(例如:軟性顯示器、軟性太陽能電池與軟性感測器等)。讓

學生了解未來投入相關產業該具備的技術。

**Flexible Electronics Process　　3　E　　Lu Wei-Hua、Lin Hsuan-Kai**

This course is designed to introduce flexible electronics process and describes the market and application trend. The content includes the thin film, lithography, etch, principle of laser, electrode patterning, Roll to Roll process, advance packing and applications (including flexible display, flexible solar cell and flexible sensor applications). The course will offer the basic knowledge relative to flexible electronics field.

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)農企業管理系：

### 各國休閒農業發展　　3 選　　段兆麟，上

休閒農業具有綠色旅遊與體驗經濟的本質，已蔚為世界農業發展與旅遊風潮的主要趨勢。「自然」、「健康」、「體驗」已成為普世的價值，所以休閒農業在世界各地普遍發展。然而國際間農村農業資源各具特性，社經發展程度亦不一致，所以休閒農業乃形成多元化的發展。雖然各國所用的名詞不一，但其本質卻相同，臺灣發展休閒農業需要了解各國的特色，以求參考借鑑。因此本課程將介紹歐洲（法國、德國、英國、荷蘭）、美國、加拿大、澳洲、紐西蘭、日本、泰國、馬來西亞，及中國大陸等國的休閒農業，以明瞭各國休閒農業發展的特色與成功的經驗。

### World Recreational Agriculture Development　　3　E　　C.L.Tuan, F

The essences of Recreational Agriculture possess the characteristics of green tourism and experience economic. It already become a major trend in world agricultural development and tourism. The term "Nature," "Health" and "Experience" have become universal values. Recreational Agriculture has spread to worldwide. However, Recreational Agriculture is not the specific noun in worldwide, but its essence is the same. Due to the diversity of agricultural resource characteristics and the difference of socio-economic development levels, the recreational agriculture shows various patterns. Therefore, the objective of this course was to introduce the recreational agriculture development, and successful experiences in Europe (France, Germany, United Kingdom, and Netherlands), United States, Canada, Australia, New Zealand, Japan, Thailand, Malaysia, and Mainland China..

### 農業大數據分析應用工作坊(微型課程)　　1 選　　陳灯能，上

本工作坊為 1 學分之微學分課程，採三週密集授課方式進行，為「農業產銷管理智慧創新跨域人才培育微學程」之總結課程。本課程主要教授學生收集政府公開資訊平台之資料，利用 RapidMiner 等大數據分析工具，撰寫一份農業大數據分析實務報告。內容包含 1. 大數據分析與資料科學 2.政府開源資料與資料準備：政府及國際組織公開資訊：如行政院農委會「農業統計資訊網」、農情資訊、農畜漁市場行情網、世界貿易中心資料庫 (ITC)、聯合國糧農組織之糧食統計庫(FAOSTAT)。3. 大數據分析方法與於農業上之應用案例。4. RapidMiner 數據分析平台簡介。5. 使用政府公開資訊平台取得資料之分析實作。6. 專題報告發表。

### Workshop on Agricultural Big Data Analysis　　1 E　　D.N. Chen, F

This workshop is a one credit micro credit course designed to provide the analytical skills needed for conducting big data analysis using the open data sources of the agricultural authorities. The students are expected to write and present the findings at the end of the workshop. The workshop will be conducted toward the end of the semester as a capstone course for students had acquired prior knowledge about the production and marketing aspects of smart agriculture. The workshop will be conducted through three weeks of intensive course coving the following contents: 1. Big data analysis and data science; 2. Government open source data and data preparation: data from the agricultural authorities, trade data from ITC, FAOSTAT, and etc.; 3. Cases of agricultural big data analysis; 4. Data Analysis Platform: RapidMiner; 5. Practices using the open source data; 6. Project Report.

**休閒農業發展與經營策略　　3 選　　段兆麟，下**

本課程旨在使學生了解休閒農業之意義與發展背景、理論、類型，與相關法規，及休閒農場規劃設計的原理與方法、經營策略與管理實務，以增進學生對休閒農業之知識及經營管理之能力。課程架構如下：休閒農業理論、休閒農業之範圍與類型、休閒農業相關法規與計畫、休閒農場之規劃、休閒農場之經營策略、休閒農場體驗活動設計、休閒農場行銷、遊憩、人力、財務等管理、休閒農場之解說服務、休閒農場之民宿經營、教育農園經營、市民農園經營、休閒農場經營診斷、休閒農業未來發展。

**Recreational Agriculture Development and Business Strategy　　3　E　　C.L.Tuan, S**

The contents of the course are as following：Theory of leisure agriculture；Scope and patterns of leisure agriculture；Regulation and projects related to leisure agriculture；Planning of leisure farms；Strategy of leisure farm management；Designing the experience activities of leisure farm；Marketing, recreation, human resources, and financial management of leisure farms；Explanation services of leisure farm；Accommodation management for leisure farm；The management of educational farms；The management of Allotment；Diagnosis to leisure farm；Future development for leisure agriculture..

**大陸農企業制度與發展　　3 選　　段兆麟，上**

大陸是台灣農企業的重要市場。本課程分為三部份：基本篇，包括環境、政策、法規、組織、體制等。產業篇，包括農畜漁產業、農用資材業、加工與運銷業、服務業、觀光休閒業等。問題與對策篇。授課方式採任課教師與外聘專家（產、官、學者）共同講授的方式，以期達成研究大陸農企業，及培養台商在大陸農企業經營管理人才的目的。課程內容大要：大陸農業發展與政策、大陸農企業相關法規、大陸鄉鎮企業制度、大陸農產、畜產、水產企業、大陸農用資材企業、大陸農產加工與運銷企業、大陸農業產業化經營、大陸農企業市場分析、大陸農企業人力管理、大陸觀光休閒農業、台商農企業經營的問題與對策。

**Agribusiness Institution and Development in Mainland China　3　E　　C.L.Tuan, F**

The contents of the course are as follows：Agricultural development and policies in Mainland China.；Regulatory system of agribusiness in Mainland China.；Public businesses in Mainland China.；Agricultural, livestock, and agricultural business in Mainland China.；Agribusiness in agricultural materials sector in Mainland China.、Agribusiness in agricultural product processing and transportation sector in Mainland China.；Agricultural industrialization in Mainland China.；The markets of agribusiness in Mainland China.；Employee management of agribusiness in Mainland China.；Tourism and leisure agriculture in Mainland China.；The problems and countermeasures of Taiwanese agribusiness in Mainland China.

**食品行銷專題　　3 選　　黃朝欽、上**

本課程宗旨在以食品農企業經理人的立場，引領學生將農企業行銷管理的學理與實務，應用在食品農企業上，使其能以市場導向的觀念，落實食品行銷的理念與做法。本課程預計以專題的方式搭配學術期刊或實務個案的方式進行。本課程內容包括：食品行銷導論、食品行銷環境、食品行銷策略規劃、食品行銷戰術與執行、食品行銷成效。

**Seminar on Food Marketing　　3　E　　C.C. Huang, F**

This course aims to guide students to apply theories and practices of the agribusiness marketing, into

food industry, particularly from the perspective of a food agribusiness manager. This course discusses topics on food marketing using the method of either related academic papers or real-world cases. Its contents include: introduction of food marketing, environment of food marketing, strategic marketing (e.g., segmentation, targeting, positioning) in food marketing, 4Ps in food marketing, marketing execution and performance.

**農企業品質認驗證制度與實務　　3 選　　鄭秋桂，下**

農企業或相關產業之品質管理，依賴相關制度與方法作維持。而台灣或國際共同之品質管理與認驗證制度與實務，於農業或相關產業則值得認識與參考。本門課討論範圍包括台灣農產品認驗證制度、ISO、HACCP 、GLOBALGAP、JAS、公正貿易(Fair Trade)、GI (Geographical Indications)、產地證明標章、產地國標籤( Country-of-origin labeling, COOL）、Halal、Kosher、Artisinal、優良商店(GSP)等。

**Agribusiness Quality Certificate System and Practice　　3　E　　C.K. Cheng, S**

The content of Agribusiness Quality Certificate System and Practice are TAIWAN's System of Agricultural Products, ISO, HACCP, GLOBALGAP, JAS, Fair Trade, GI (Geographical Indications), Country-of-origin labeling (COOL), Halal, Kosher, Artisinal, GSP.

## (二)資訊管理系：

**資訊管理專題討論　　1 選**

本課程為一橫跨三學期之課程，其主要目的在提供學生將課堂所學之管理理論及資訊技術應用於業界日常作業管理之機會，學生須經由討論、資料收集、面談、調查等工作，期能瞭解所面對的企業組織，辨明此組織之優劣點，提出能增加企業競爭力之計畫，並分析衡量計畫執行後的組織效益。

**Seminar in Information Management　　1　E**

This is a three-semester course. The objective of the course is to provide students an opportunity to apply the managerial knowledge and IT techniques learned in the class to the real world industrial organizations. The course is conducted in an informal manner. By discussion, data collection, interviews, survey and etc., students can obtain an in-depth understanding of an organization, to identify the strengths and weakness of an organization, to construct proposals hoping the organization can gain and to evaluate the outcomes of the projects.

## (三)工業管理系：

**製造資訊系統設計實務(特色課程)　　2　選**

豐田精實生產現場強調目視化管理，也就是將所有治具或零件或半成品、生產活動及任何生產系統的效能指標，都能以簡單形式表現出來，生產線上任何人都能馬上獲知生產的狀況。因此量身訂製發展製造資訊系統，用以協助生產現場對目視化管理的需求就產生。本課程藉由教導 Ragic 軟體，企業雲端資料庫，讓程式能力不佳的工管系學生也能透過本課程學習發展資訊系統，來解決現代化工廠製造端生產資訊不透明的問題。

**The Practice of Manufacturing Information System　　2　E**

Toyota production system or lean manufacturing are emphasized on visual management. It means the placement in plain view of all tools, parts, WIP, production activities and indicators pf production performance. Then the status of the production system can be understood at a glance by everyone involved. Hence, design a manufacturing information system according to the specified is needed. The course will be taught Ragic, web database builder, to help students with poor coding abilities can also develop information system and solving the problem of unclear production data between workstations at modern manufacturing factories.

**製造資訊系統設計實務(深碗課程)　　1 選**

豐田精實生產現場強調目視化管理，也就是將所有治具或零件或半成品、生產活動及任何生產系統的效能指標，都能以簡單形式表現出來，生產線上任何人都能馬上獲知生產的狀況。因此量身訂製發展製造資訊系統，用以協助生產現場對目視化管理的需求就產生。本課程藉由教導 Ragic 軟體，企業雲端資料庫，讓程式能力不佳的工管系學生也能透過本課程學習發展資訊系統，來解決現代化工廠製造端生產資訊不透明的問題。

**The Practice of Manufacturing Information System (Application of Practice)　　1　E**

Toyota production system or lean manufacturing are emphasized on visual management. It means the placement in plain view of all tools, parts, WIP, production activities and indicators pf production performance. Then the status of the production system can be understood at a glance by everyone involved. Hence, design a manufacturing information system according to the specified is needed. The course will be taught Ragic, web database builder, to help students with poor coding abilities can also develop information system and solving the problem of unclear production data between workstations at modern manufacturing factories..

**(四)餐旅管理系：**

**商品創新設計及實習　　3 選　　張慧珍、下**

本課程旨在培養學生對餐飲、飯店業之商品企畫及創新設計之瞭解。本課程主要在導入設計理念及啟發學生思考，由實務演練過程中，逐步修正構想、變更設計及調整製程，使學生具有將創意轉化為產品製作之能力。，並針對國內市場中流行餐飲商品之形成過程進行解構並分析流行預測方式。並藉由模擬實習，實際演練商品設計活動之安排。

**Product Innovation Design and Practice　　3　E　　H. C. Chang, S**

This course educates the student about hospitality merchandise and Product Innovation Design。The contents of this course are guiding students to imagining, to collecting ideas, to innovation design and to manufacture an hospitality product or a pilot product.　And it also aims at local market popularity in the hospitality formation process of merchandise and analyze.

**(五)時尚設計與管理系：**

**織品品質鑑定與管理　　2　選**

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、織品品質管理的內涵、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。

**Quality identification and management of Textile 2 E**

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

**展演企劃 2 選**

本課程主要針對流行設計之企劃能力，與實務制作方法，從發掘問題、確立問題之所在、及尋求問題解決之方法，執行展演企劃案之實踐。

**Plan of Exhibition Performance 2 E**

This course targeting fashion design planning capabilities and implementation methods aims at identifying, validating, and solving problems during exhibition plan implementations.

**流行產業管理研究法 1 選**

課程提供學生有演練有關服飾管理及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。

**Research Methods of Fashion Industries and Managements 1 E**

This study provides students with practical experience in the research process of problem identification, problem definition, alternative identification, research design, methodology, questionnaire design, data collection and analysis in apparel marketing and management. Theories and methods of behavioral research including experimental design and advanced evaluation research techniques are all included in this course.

**服飾圖案設計企劃 3 選**

包括靈感蒐集與系列流行圖案趨勢研析與創作發展，本課程主要介紹服飾圖案設計方法、創作實務研究與設計企劃執行。學生將從流行色彩預測與時尚趨勢主題之探索，研擬例如：花卉、動物、幾何、抽象與民俗等印染單元圖案設計與連續圖案應用發展，執行完整之服飾設計企劃。

**Design Projects for Costume Patterns 3 E**

The course introduces designs research of creative methods and practices, including the collection of design ideas and the development of series of patterns for fashion, e.g. floral patterns, animal patterns, geometric patterns, abstract patterns and folk patterns etc. Students will be expected to observe and study the colour predictions and explore topics of fashion trends. The application of printing design units and the development of continuous patterns will also be studied, in order to perform a complete costume design project.

**時尚管理專題　　1 選**

本課程為一橫跨四學期之課程，其主要目的在提供學生將課堂所學之時尚管理理論及技術應用於業界日常作業管理之機會，學生須經由討論，資料收集，面談，調查等工作。

**Fashion Management Special Topic　　1 E**

This is a four-semester course and is conducted over the second semester of the first year and the first semester of the second year. The objective of the course is to provide students an opportunity to apply the Fashion managerial knowledge and techniques learned in class to industrial applications. The course is conducted in an informal manner by discussion, data collection, interviews, survey, etc.

## (六)時尚設計與管理系：

**英文情境與口語表達(1)　　2 選**

本課程設計為非英文語母語國家學生。主要著重學生在各日常生活場合之英文情境語彙與表達方式。課程中排養學生在日常生活常場合所需詞彙與應對表達英文。

**Situational Conversation and Reading(1)　　2 E**

This course is designed to help students communicate more effectively and confidently in spoken English. The course addresses improvement in oral skills needed for daily activities. Students also have opportunities to develop their vocabulary and grammar skills as well as practice pronunciation through group exercises. This course is limited to students whose first language is not English. Students will have the opportunity to develop their reading, listening, and speaking skills and participate in activities and exercises that explore and acquire languages for daily living situations through life.

**英文情境與口語表達(2)　　2 選**

本課程設計為非英文語母語國家學生。主要著重學生在討論與導覽口語之英文情境語彙與表達方式。課程中排養學生在日常生活常場合所需詞彙與應對表達英文。

**Situational Conversation and Reading(2)　　2 E**

This course is designed to help students communicate more effectively and confidently in spoken English. The course addresses improvement in oral skills needed for class discussions, presentations for escorted tours. Students also have opportunities to develop their vocabulary and grammar skills as well as practice pronunciation through group exercises. This course is limited to students whose first language is not English. Students will have the opportunity to develop their reading, listening, and speaking skills and participate in activities and exercises that explore and acquire languages for daily living situations through life.

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

**運動多媒體整合實務應用(特色課程)　　2　選**

本課程主要目的在協助學生明瞭網站設計與多媒體功能運用的概念與實務操作，多媒體網路行銷等相關資訊，進而運用到職場上。課程內容包含：網路多媒體概念、線上運動市調問卷與操作、線上市調分析、社群行銷、網頁編輯及內容規劃等。

**Application of Exercise Multimedia　　2　E**

The major purpose of this course is to help students understand the concepts and practical operations of website design, multimedia function application, online marketing, and related information for applying in the future. Course content includes: concepts of online multimedia, online sports market survey and operations, online marketing survey analysis, community marketing, web editing, as well as content planning.

**健身俱樂部經營管理與銷售實務(微型課程)　1　選**

本課程主要目的在培養學生了解健身俱樂部的經營管理並使成為一位稱職的管理者。課程內容包含：產業競爭分析、行政作業管理、人力資源管理、經營理念市場規劃、會務管理、行銷管理、財務與危機風險管理。

**Fitness Club Management and Sales Practice　1　E**

The main purpose of this course is to train students to understand the management of a fitness club and to become a competent manager. Course content includes: industrial competition analysis, administrative operation management, human resource management, business concept market planning, conference management, marketing management, financial and crisis risk management.

**運動教學指導英語會話(微型課程)　　1　選**

本課程主要訓練學生精熟運動項目之運動教學指導英語學習。鑑於學生為運動專業本科生，熟悉運動英文專業術語不僅限於專業領域，更能廣泛運用於日常運動活動。

**English in Sports Instruction　　1　E**

This course aims to help students recognize and learn to use the sports terminology in English. Through the introduction of terminology used in multiple sports, students are expected to develop and enhance their ability of communicating when having to give instructions in English in the professional field or in daily practice.

**大腦運動訓練學(微型課程)　　0.5　選**

本課程主要目的在培養學生能夠透過大腦訓練學，增加其自我覺知、動機和知識，將身體活動的物理刺激大腦中的神經元，透過大腦的運作能夠增進運動表現，並讓學生有效地在健身產業上利用大腦訓練學與促進客戶身體健康。

**Brain Motor Training　　0.5　E**

The main purpose of this course is to train students to increase their self-awareness, motivation, and knowledge through brain training, to physically stimulate neurons in the brain through physical activity, to improve motor performance through the operation of the brain, and to enable students to effectively use brain training in the fitness industry to promote the health of customers.

**科技應用與實作　　2　選**

在科技快速發展的世界裡，若只能複製以往舊有的模式，卻沒有考量目前科技發展的背景,提出更創新的商業模式是無法成功的。本課程主要包含,AR、VR、微電影、App Inventor 2 等新興科技創新應用的基礎教學及實作演練,使學生具備建立上述新興科技基礎應用的能力。透過專題實作使同學更了解新興科技創新應用的可能性，以提升學生的科技素養及科技應用能力。

**Application and Practice of Technology　　2　E**

This course mainly includes the basic teaching and practical exercises of AR, VR, micro-film, App Inventor 2 and other emerging technology innovation applications, so that students have the ability to establish the above-mentioned emerging technology basic applications. Through project implementation, students will be more aware of the possibility of innovative applications of emerging technologies, so as to enhance students' technological literacy and technology application capabilities.

## (一)應用外語系：

**文創展覽文本翻譯　　3　選　　王瀚陞**

台灣文化創意產業（CCI）蓬勃發展，對翻譯的需求不斷增長。本課程旨在提供實務訓練，以協助發展學生對於文化、創意及展覽產業相關文本之翻譯技巧與能力。此外，本課程希望培養學生作為新手譯者時，對自己譯文的反思能力、依據文本類型與特色運用適當翻譯技巧的能力，以及解決問題的能力，以因應翻譯過程中遭遇的挑戰。本課程的前半部著重英漢翻譯，後半部則以漢英翻譯為主。

**Translating for Cultural, Creative and Exhibitive Purposes　　3　E　　Han-Sheng Wang**

Taiwan’s cultural and creative industry (CCI) is booming and the demand for translation is growing. This course aims to provide students with practical training to develop their skills in translating for cultural, creative and exhibitive purposes. Through training students as novice translators to reflect on their own translations, this course also encourages students to analyze the genres of texts before they can apply appropriate skills and to develop their problem-solving ability to meet the challenges encountered during translation. In addition to translation practice, students will compare existing translations with their own translations to determine the extent to which their translation can be improved and fine-tuned. The first part of this semester focuses on translation from English to Chinese, while the second part focuses on translation from Chinese to English.

## (二)幼兒保育系:

**幼兒體能　　2　選　　劉錞綺、下**

課程主旨在探討運動體能遊戲對幼兒發展的重要性及其功能，課程內容包含：幼兒的

動作發展及運動能力、幼兒身體動作要點和指導方法、幼兒創作體操、身體動作課程創作、幼兒體能活動的計劃。

**Home Economics** **2 E** **Chun-Chi Liu**

This course explores the significance and contribution of physical activities how to influence the child development. The course are including the child development of introducing and designing of physical education, games, and activities abilities; and it creates youngster's gymnastics； movement function and ability； factors regarding physical movement, and instructions of fitness activities.

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## (三)客家文化產業研究所:

**客家語聽力與口說** **2 選**

在科技快速發展的世界裡，若只能複製以往舊有的模式，卻沒有考量目前科技發展的背景,提出更創新的商業模式是無法成功的。本課程主要包含,AR、VR、微電影、App Inventor 2 等新興科技創新應用的基礎教學及實作演練,使學生具備建立上述新興科技基礎應用的能力。透過專題實作使同學更了解新興科技創新應用的可能性，以提升學生的科技素養及科技應用能力。

**Application and Practice of Technology** **2 E**

This course mainly includes the basic teaching and practical exercises of AR, VR, micro-film, App Inventor 2 and other emerging technology innovation applications, so that students have the ability to establish the above-mentioned emerging technology basic applications. Through project implementation, students will be more aware of the possibility of innovative applications of emerging technologies, so as to enhance students' technological literacy and technology application capabilities.

**客家語拼音與正音** **2 選**

在科技快速發展的世界裡，若只能複製以往舊有的模式，卻沒有考量目前科技發展的背景,提出更創新的商業模式是無法成功的。本課程主要包含,AR、VR、微電影、App Inventor 2 等新興科技創新應用的基礎教學及實作演練,使學生具備建立上述新興科技基礎應用的能力。透過專題實作使同學更了解新興科技創新應用的可能性，以提升學生的科技素養及科技應用能力。

**Application and Practice of Technology** **2 E**

This course mainly includes the basic teaching and practical exercises of AR, VR, micro-film, App Inventor 2 and other emerging technology innovation applications, so that students have the ability to establish the above-mentioned emerging technology basic applications. Through project implementation, students will be more aware of the possibility of innovative applications of emerging technologies, so as to enhance students' technological literacy and technology application capabilities.

**客語次方言研究** **3 選**

在科技快速發展的世界裡，若只能複製以往舊有的模式，卻沒有考量目前科技發展的背景,提出更創新的商業模式是無法成功的。本課程主要包含,AR、VR、微電影、App Inventor 2 等新興科技創新應用的基礎教學及實作演練,使學生具備建立上述新興科技基礎應用的能

力。透過專題實作使同學更了解新興科技創新應用的可能性，以提升學生的科技素養及科技應用能力。

**Application and Practice of Technology 3 E**

This course mainly includes the basic teaching and practical exercises of AR, VR, micro-film, App Inventor 2 and other emerging technology innovation applications, so that students have the ability to establish the above-mentioned emerging technology basic applications. Through project implementation, students will be more aware of the possibility of innovative applications of emerging technologies, so as to enhance students' technological literacy and technology application capabilities.

**文化書寫:理論與實務 2 選**

在科技快速發展的世界裡，若只能複製以往舊有的模式，卻沒有考量目前科技發展的背景,提出更創新的商業模式是無法成功的。本課程主要包含,AR、VR、微電影、App Inventor 2 等新興科技創新應用的基礎教學及實作演練,使學生具備建立上述新興科技基礎應用的能力。透過專題實作使同學更了解新興科技創新應用的可能性，以提升學生的科技素養及科技應用能力。

**Application and Practice of Technology 2 E**

This course mainly includes the basic teaching and practical exercises of AR, VR, micro-film, App Inventor 2 and other emerging technology innovation applications, so that students have the ability to establish the above-mentioned emerging technology basic applications. Through project implementation, students will be more aware of the possibility of innovative applications of emerging technologies, so as to enhance students' technological literacy and technology application capabilities.

**臺灣客家文化概論 3 選**

在科技快速發展的世界裡，若只能複製以往舊有的模式，卻沒有考量目前科技發展的背景,提出更創新的商業模式是無法成功的。本課程主要包含,AR、VR、微電影、App Inventor 2 等新興科技創新應用的基礎教學及實作演練,使學生具備建立上述新興科技基礎應用的能力。透過專題實作使同學更了解新興科技創新應用的可能性，以提升學生的科技素養及科技應用能力。

**Application and Practice of Technology 3 E**

This course mainly includes the basic teaching and practical exercises of AR, VR, micro-film, App Inventor 2 and other emerging technology innovation applications, so that students have the ability to establish the above-mentioned emerging technology basic applications. Through project implementation, students will be more aware of the possibility of innovative applications of emerging technologies, so as to enhance students' technological literacy and technology application capabilities.

**生命禮俗文化 3 選**

在科技快速發展的世界裡，若只能複製以往舊有的模式，卻沒有考量目前科技發展的背景,提出更創新的商業模式是無法成功的。本課程主要包含,AR、VR、微電影、App Inventor 2 等新興科技創新應用的基礎教學及實作演練,使學生具備建立上述新興科技基礎應用的能

力。透過專題實作使同學更了解新興科技創新應用的可能性，以提升學生的科技素養及科技應用能力。

**Application and Practice of Technology 3 E**

This course mainly includes the basic teaching and practical exercises of AR, VR, micro-film, App Inventor 2 and other emerging technology innovation applications, so that students have the ability to establish the above-mentioned emerging technology basic applications. Through project implementation, students will be more aware of the possibility of innovative applications of emerging technologies, so as to enhance students' technological literacy and technology application capabilities.

## (四)技術及職業教育研究所:

**海外產學實務研究 1 選**

本課程以海外產學機構實務參訪學習為主，可有效提升學生對各國技職教育與產學機構實務之認識與瞭解。本課程強調學生該如何掌握最新之國際產學機構發展趨勢，如何收蒐集相關參考資料，並就個人赴產學機構實習之過程、發現、心得、建議等撰寫研究實習日誌及心得報告，並以公開發表方式與其他同學分享。

**Overseas Industry-University Practice Research 1 E**

This course emphases the internship and visit at overseas industry and academic organization which can effectively enhance students to learn the precise practice of overseas industry and technical and vocational education institutions. This course also stresses how students grasp the latest trend of overseas university-industry cooperation and collect the related data during internship. Then students need to explore the strategy, process, outcome, results, and suggestions toward the overseas university-industry organization and publish paper to share with other students.

**職能培力實務研究 1 選**

本課程目的在於培育學生擁有職場共通職能，使學生具備未來就業的實務能力，課程主題參考教育部 UCAN 的共通職能項目，包含:溝通表達、問題解決、持續學習、創新、人際互動、工作責任與紀律、團隊合作等，期許學生透過課堂討論、實作與發表等活動，厚植相關之知識、技能與態度。

**Research on Competency Development and Practice 1 E**

The purposes of this course are to cultivate students with general competency in the workplace and equip students with practical skills for future employment. The theme of the course refers to the general competency of the UCAN of the Ministry of Education, including communication and expression, problem solving, continuous learning, innovation, interpersonal interaction, work responsibility and discipline, teamwork, etc. Hope that students will build relevant knowledge, skills, and attitudes through classroom discussions, implementation, and presentation.

**創客教育課程與教材之研發 2 選**

創客教育的理念為創意設計與實作精神的結合，要求學生能針對任何學習情境，設計

及發展解決問題。本課程以創客教育為出發點，利用個案研究方式，探討各式創客課程，並發展所屬教材。

**Research and Development of Maker Education Curriculum and Material 2 E**

The conception of maker education is a combination of creative design and hands-on learning, which forces students to design and develop solutions according to any learning scenarios. The course bases on maker education. Under a case study approach, students will discuss different types of maker education curriculum and develop related learning material during the class.

**數位內容與教材之研發 2 選**

本課程主要目的在於教授學生如何利用最新的資訊科技發展數位內容與教材，

課程採實作原則，教師除講授各式軟體的操作原則外，亦讓學生自行實驗個人數位學習理念至作品中。

**Research and Development of Digital Content and Material 2 E**

The course aims to offer the knowledge base about how to use emerging technologies to develop digital content and material to mater program students. The course adopts a hands-on learning principle. During the class, the instructor not only teaches students how to use varied types of software, but also allows students to experiment their own digital learning conceptions into projects.

傳閱附件 1-5--本校各學院所屬各系(所)課程中英文摘要-國際學院

## 五、 國際學院

### (一)熱帶農業暨國際合作系：

**遙測及地理資訊系統應用　　3　選　　陳金諾**

遙感探測是一種快速取得大範圍地表資訊的方法，為地理資料的主要來源之一，由於近年來數位影像擷取及分析技術的進步，數位遙測影像資料結合地理資訊系統作為蒐集、整理及分析地表現象的工具已廣泛的應用於各個相關領域之中，本課程主要目的為介紹遙測與 GIS 基本原理及其在水資源及水土災害之防救災上之應用。培養學生在遙測與 GIS 之基礎知識與興趣，以利其後續進階課程之學習。

**Application of Remote Sensing and Geographic Informatuon System　　3　　E**

Remote sensing is useful in quickly obtaining large-scale surface information, which is one main source of geographic data. Recently, there has been great advances in digital image capture and analysis technology that needs to be increasingly understood. The objective of this course are; (1) to introduce the basic principles of remote sensing and GIS, and their application in water resources, and prevention and relief of soil and water related disasters. (2) Cultivate students' basic knowledge and interests in remote sensing and GIS, so as to facilitate their subsequent advanced courses.

**益生菌與水產養殖　　3　選　　鄭達智**

水產養殖生物的成長和健康與利潤和成本息息相關。益生菌不僅應用於水產飼料中以改善成長和促進健康，還應用在水體與底質以維持最佳養殖環境條件。本課程涵蓋但不限於以下主題：1）從各種不同的水生宿主（魚類和貝類）與棲息地中分離、篩选和鑑定益生菌的策略，2）體內和體外活性功能評估，3）益生菌與腸道之間的粘膜免疫反應及 4）田間試驗成效。

**Probiotics and Aquaculture　　3　　E**

The growth and health of aquaculture organisms are related to profit and cost. Probiotics are not only used in aquatic feeds to improve the growth and health but also in environments to maintain optimal culture conditions. This course covers but not limit to the following topics: 1) strategies for isolation, screening and identification of probiotics from variable habitats and aquatic hosts (fish and shellfish), 2) in vitro and in vivo functional activities evaluations, 3) mucosa immunity between probiotics and intestines and 4) the field trials.

**草藥與水生動物疾病控制　　3　選　　鄭達智**

包括魚蝦貝類在內的水生動物養殖，產業規模與重要性日趨增加，是滿足全球海鮮需求的主要產業。使用草藥控制疾病是發展永續水產養殖的有效替代方法。本課程內容涵蓋，傳統草藥於水生動物（魚和蝦）疾病控制之應用、草藥的製備、遞送、免疫調節和增強抗病之作用、草藥功能性成分和作用機製的分析，另外綜述有關魚類和蝦類上使用草藥控制疾病的最新文獻。

**Herbal Medicine and Aquatic Animal Disease Control　　3　　E**

The farming of aquatic animals including fish and shellfish remains a repaid growth industry to meet

the global demand of sea food. The use of herbal medicine to control disease becomes an alternative to develop an effective and sustainable aquaculture. The course contents cover major traditional herbal medicines used on aquatic animals mainly fish and shrimp. The herbal preparation, delivery, immune modulation effects and enhancement of disease resistance are discussed. Analysis of functional ingredients and mechanisms also are included. In addition, current literature reviews on the use of herbal medicines on fish and shrimp are introduced.

## (二)觀賞魚科技及水生動物健康國際學位專班：

**水生動物疾病診療實習(1)　　1　選**

本課程講解及實際操作各種水生動物病原(包括細菌、病毒、黴菌及寄生蟲等)之分離,鑑定及其他水生動物疾病診斷技術。本課程亦包括水生動物疾病之預防與治療及魚類免疫學診斷技術之應用。

**Aquatic Animal Diseases(1)　　1　E**

This course is designed as an elective clinical block rotation in field services. Students electing this course should have successfully completed the two theoretical/laboratory courses in special species, providing the foundation for participation in this course. It is the only clinical course offering hands-on experience with medical care to aquatic species.

**水生動物疾病診療實習(2)　　1　選**

本課程講解及實際操作各種水生動物病原(包括細菌、病毒、黴菌及寄生蟲等)之分離,鑑定及其他水生動物疾病診斷技術。本課程亦包括水生動物疾病之預防與治療及魚類免疫學診斷技術之應用。

**Aquatic Animal Diseases (2)　　1　E**

This course is designed as an elective clinical block rotation in field services. Students electing this course should have successfully completed the two theoretical/laboratory courses in special species, providing the foundation for participation in this course. It is the only clinical course offering hands-on experience with medical care to aquatic species.

**水生動物疾病診療實習(3)　　2　選**

本課程講解及實際操作各種水生動物病原(包括細菌、病毒、黴菌及寄生蟲等)之分離,鑑定及其他水生動物疾病診斷技術。本課程亦包括水生動物疾病之預防與治療及魚類免疫學診斷技術之應用。

**Aquatic Animal Diseases(3)　　2　E**

This course is designed as an elective clinical block rotation in field services. Students electing this course should have successfully completed the two theoretical/laboratory courses in special species, providing the foundation for participation in this course. It is the only clinical course offering hands-on experience with medical care to aquatic species.

**水生動物疾病診療實習(4)　　2　選**

本課程講解及實際操作各種水生動物病原(包括細菌、病毒、黴菌及寄生蟲等)之分離,鑑定及其他水生動物疾病診斷技術。本課程亦包括水生動物疾病之預防與治療及魚類免疫學診斷技術之應用。

**Aquatic Animal Diseases (4)** **2** **E**

This course is designed as an elective clinical block rotation in field services. Students electing this course should have successfully completed the two theoretical/laboratory courses in special species, providing the foundation for participation in this course. It is the only clinical course offering hands-on experience with medical care to aquatic species.

## (三)動物用疫苗國際學位專班：

**生物技術與生技產業** **2 選** **朱純燕**

本課程旨在加強生物技術之理論及應用之鏈結，範圍涵蓋基因工程技術、蛋白質工程技術、生技產業之發展等三大領域之多元學習，培養生物技術相關人才為目的。

**Biotechnology and Bioindustry** **2** **E** **C.Y. Chu**

This class is going to train students to understand the concept of biotechnology and their applications. The curriculum will emphasize three major areas, including genetic engineering, protein engineering and industrial applications. The purpose is to cultivate biotechnology-related talents.

**動物疫苗製程特論** **2 選** **朱純燕**

課程內容包括：抗原製作、佐劑調配、劑型與配方、活毒疫苗製程、不活化疫苗製程、基因工程疫苗製程等標準操作講解。搭配實習課程於動物製劑試量產中心實地操作，訓練修課學生疫苗製造之實用能力，可直接與產業界人才需求接軌之課程。

**Advance animal vaccine production** **2** **E** **C.Y. Chu**

This course provides manufacturing-level production lectures of various veterinary vaccines, using the Animal Biologics Pilot Production Center. Processes covered include antigen production, adjuvant formulation, and manufacturing of live, inactivated, and genetically engineering vaccines. Students will learn practical production techniques useful for operations in a cGMP animal vaccine factory, allowing direction transition into industry.

**疫苗免疫學** **2 選** **朱純燕**

本課程主要探討與疫苗相關之免疫反應與機制。內容包括：免疫反應的調節、新生動物之免疫反應、黏膜免疫、劑型、免疫途徑與劑量對免疫反應之影響、新型疫苗之免疫優勢、疫苗免疫副作用之探討、豬用疫苗免疫適期之探討、反芻獸用疫苗免疫適期之探討等。

**Immunology of vaccine** **2** **E** **C.Y. Chu**

This course focus on discussing immune responses of vaccines, including: Regulation of immune response, Immunity in the Fetus and Newborn, Mucosal immunity, Influence factors: route, type and dose, Immune responses of new type vaccines, Disorders of vaccination, Appropriate vaccination regimen of swine vaccines, Appropriate vaccination regimen of ruminant vaccines.

傳閱附件 1-6--本校各學院所屬各系(所)課程中英文摘要-獸醫學院

# 六、 獸醫學院

## (一)獸醫學系：

**大動物臨床診療實習(1)　　1　選　　李旭薰**

經由本課程之修習，學生可獲得大動物臨床診療之實際經驗，並了解產業之現況，將增進學生於畢業後從事相關產業服務與研究之動力。

**Clinical Practice in Large Animal (1)　　1　E　　HSU-HSUN, LEE**

In this course, student has to join the clinical work in the dairy farm. Student will learn the clinical skills of large animal diagnosis and treatment. In addition, student will know the real situation of dairy cow industry.

**大動物臨床診療實習(2)　　1　選　　李旭薰**

經由本課程之修習，學生可獲得大動物臨床診療之實際經驗，並了解產業之現況，將增進學生於畢業後從事相關產業服務與研究之動力。

**Clinical Practice in Large Animal (2)　　1　E　　HSU-HSUN, LEE**

In this course, student has to join the clinical work in the dairy farm. Student will learn the clinical skills of large animal diagnosis and treatment. In addition, student will know the real situation of dairy cow industry.

**乳牛生產醫學(1)　　2　選　　李旭薰**

經由本課程之修習，學生可獲得乳牛生產醫學之相關知識，並透過實際案例之參與了解生產醫學的應用價值與施行方式，可讓學生獲得對於整體醫療之能力。

**Production Medicine in Dairy Cow (1)　　2　E　　HSU-HSUN, LEE**

In this course, we provide the opportunity for the student has more exposure to the application of bovine production medicine. In addition, student will know the advances of bovine production medicine by case studies in dairy cow.

**乳牛生產醫學(2)　　2　選　　李旭薰**

經由本課程之修習，學生可獲得乳牛生產醫學之相關知識，並透過實際案例之參與了解生產醫學的應用價值與施行方式，可讓學生獲得對於整體醫療之能力。

**Production Medicine in Dairy Cow (2)　　2　E　　HSU-HSUN, LEE**

In this course, we provide the opportunity for the student has more exposure to the application of bovine production medicine. In addition, student will know the advances of bovine production medicine by case studies in dairy cow.

傳閱附件 1-7--本校各學院所屬各系(所)課程中英文摘要-達人學院

## 七、 達人學院

### 行銷設計微學堂新開課程中英文課綱

**口語訓練與表達/策展實務(微型課程) 0.3 選 蔡展維**

1.訓練 Hold 住全場的能力(口語表達/肢體語言)
2.強化個人特質吸引目光(I SEE YOU/互動技巧)
3.策展概念思考(提案內容邏輯與設計思考/日常觀察的應用延伸)
4.演練/模擬上台提案情境(氣勢要先贏/精彩開始掌聲結束)

**Oral Training and Expression / Curating Practice 0.3 E C. W. Tsai**

1. Interactive Techniques.
2. Oral expression skills
3. How to Become a Curator
4. Interactive Techniques

**數位排版與設計(Adobe InDesign)(微型課程) 0.6 選 蔡展維**

1.軟體介面介紹及工具使用
2.InDesign 使用技巧教學
3.作品改善檢討暨成果展示

**Digital Typesetting and Design (Adobe InDesign) 0.6 E C. W. Tsai**

1. The interface in Adobe InDesign software.
2. Tips for creating e-books by using InDesign software.
3. Final presentation.

### 職能培力微學堂新開課程中英文課綱

**時間管理(微型課程) 0.3 選 陳秀足**

1.建立時間的價值感
2.引發時間管理的動力
3.時間管理實踐操作
- ●大學年行事曆
- ●月週日時間運用表
- ●艾森豪事件分類表

4.建立自己的 TM 系統

**Time Management 0.3 E H. T. Chen**

1. Build up the value of time.
2. Trigger the intrinsic motivation toward time management.
3. Put into practice.
4. Build up self-management system.

**公眾表達藝術(微型課程) 0.3 選 陳秀足**

1.表達的開始
2.說話的邏輯性
3.內容聚焦言之有物
4.推播優勢與整合想法

5.舉例說明更易接納

**Public Expression 0.3 E H. T. Chen**

1. How to get started
2. Use logic in oral expression
3. Get to the point
4. Information delivery and idea Integration
5. Persuade your audience by using case

## 職場人際溝通與衝突管理(微型課程) 0.3 選 陳秀足

1.人際發展四大要素

2.人際網路與職場溝通

3.溝通技巧

4.衝突管理

**Workplace Communication and Conflict Management 0.3 E H. T. Chen**

1. Four elements of interpersonal development
2. Interpersonal network and workplace communication
3. Communication skills
4. Conflict management

## 國際職涯規劃力(微型課程) 0.3 選 陳秀足

1.專業人才的履歷撰寫架構

2.跨國際的職能學習與人才培育

3.職涯學習藍圖

**International Perspective Cultivation and Career Blueprint Creation 0.3 E H. T. Chen**

1. Introduction of professional resume framework.
2. Transnational competency learning and talent training.
3. Career learning blueprint.

## 用色彩認識自我風格(微型課程) 0.3 選 陳秀足

1.色彩與人際風格

2.色彩轉換與溝通思維

3.色彩在工作專業的應用

**Know Yourself by Using Color 0.3 E H. T. Chen**

1. Color and social style.
2. Color transition and communication mindset.
3. Color application in work specialty.

## App Service 擷取清洗大數據(微型課程) 0.5 選 陳永祥

在本實踐課程中，我們將學習使用如何使用 ASP.NET MVC Web 應用程式存取 SQL Server 結構化資料與 XML、JSON、CSV 或文字檔等非結構化資料，同整合開放資料，將資料整理成有用的資訊，最後整合 Bootstrap 套件製作成圖文並茂的網頁，並設計成支援手機、平板與桌機使用的響應式網站。最後部署在 Azure Web Sites 建置成雲端網站，提供使用者瀏覽查詢使用。

**Azure Service Captures Cleansing Big Data 0.5 E Y. H. Chen**

In this practical course, we will learn how to use ASP.NET MVC web applications to access SQL Server structured data and unstructured data such as XML, JSON, CSV, or text files, and integrate open data to organize data Useful information, and finally integrated the Bootstrap package to create a graphic web page, and designed to support mobile, tablet and desktop responsive websites. Finally, it is deployed in

Azure Web Sites to build a cloud website to provide users with browsing queries.

**AI 電腦視覺辨識與大數據結合(微型課程)　0.5　選　陳永祥**

在本實踐課程中，了解學習微軟認知服務介紹及 Azure 帳號申請，並教導 AI 電腦視覺辨識-Computer Vision 光學字元辨識 (OCR)與筆跡辨識器。在視覺化部份，學習人臉辨識服務、人臉辨識情感、AI 自訂視覺。同時利用 AI 電腦辨識，整合行動裝置，了解將行動裝置如何應用 AI 電腦辨識。最後搭配產合應用：製作整合雲端網站 ASP.NET MVC、行動網站，AI 電腦辨識與分析數據的專題。

**Combination of AI Computer Vision Recognition and Big Data**

**0.5　E　Y. H. Chen**

In this hands-on course, learn about Microsoft Cognitive Services introduction and Azure account application, and teach AI computer vision recognition-Computer Vision Optical Character Recognition (OCR) and handwriting recognizer. In the visual part, learn face recognition services, facial recognition emotions, and AI-defined vision. At the same time, AI computer identification is used to integrate mobile devices to understand how AI devices are used for mobile device identification. Finally, it is matched with the production and application: the integration of ASP.NET MVC cloud website, mobile website, AI computer identification and analysis of data.

**工業現場就業準備(1)法規及證照(微型課程)　1　選　洪宗乾**

本課程主要介紹各種工業現場需要注意的政府法規及證照，包括粉塵作業、移動式起重機、職業安全衛生、勞動法規、廢棄物與資源循環及室內品質改善等。

**Preparation of Employment to Industrial Sites (1) Regulations and Licenses**

**1　E　T. C. Hung**

This course mainly introduces govemment regulations and certificates that need attention in various industrial sites, including dust operations, heavy equipment for mobile devices, occupational safety and health, labor regulations, prefusion and resource circulation, indoor quality improvement, etc.

## 創新創業微學堂新開課程中英文課綱

**AR(擴增實境)/VR(虛擬實境)應用及實作(微型課程)　0.6　選　鍾智超**

1.Unity 3D 遊戲開發工具介紹與操作

2.3D 互動場景設計

3.VR Cardboard 虛擬實境技術之開發

4. AR 擴增實境技術之開發

**AR / VR Application and Implementation　0.6　E　C. C. Chung**

1. Introduction and operation of Unity 3D game development tools
2. 3D interactive scene design
3. Development of VR Cardboard Technology
4. Development of AR technology

**銷售及顧客互動關係(微型課程)　0.3　選　鍾智超**

1.口條練習與人際溝通

2.社交禮儀與應對練習

3.銷售表達及互動技巧

**Sales and Customer Interactions　0.3　E　C. C. Chung**

1. Oral practicing and communicating.
2. To develop the social skill and behavior.
3. Sales expression and interaction skills

**創業基本實作(微型課程)　0.3　選　鍾智超**

1.創業家學習經驗分享
2.拼布設計與實作體驗
3.機構組合與木工製作體驗

**Entrepreneurship Basic Practice Course　0.3　E　C. C. Chung**

1. Sharing of entrepreneurial learning experiences
2. Patchwork design and implementation experience
3. Institutional combination and woodworking experience

**微型創業實作(微型課程)　0.7　選　顏嘉宏**

本課程將以 Product (or Service)-based learning (產品或服務學習導向)的互動教學模式，運用十大創意創新工具的演練，引導修課的屏科大師生將自己的微型創業產品(或服務)具體化並優化；同時，在屏科大校內(或屏東縣內)建立一個商業活動實作場域，讓修課的屏科大師生可以直接面對消費者，持續進行 Plan-Do-Check-Action (PDCA)的滾動式強化。

**Micro-Entrepreneurship Implement　0.7　E　C. H. Yen**

In this course, we will use the product (or service)-based learning model and practice the “Ten Creative and Innovative Tools” for optimization of students’ or teachers’ prototype. Additionally, we want to create a “micro- entrepreneurship implement place” for students or teachers facing the customers, collecting the opinions, performing the Plan-Do-Check-Action (PDCA) improvement.

**創業基礎與實務(微型課程)　0.3　選　鍾智超**

1.創新與創業精神
2.創業機會探索與商業模式建構
3.創業團隊與資源整合
4.初創企業的設立與借力

**Foundation and Practice of Entrepreneurship　0.3　E　C. C. Chung**

1. Innovation and entrepreneurship
2. Exploration of entrepreneurial opportunities and construction of business models
3. Entrepreneurship team and resource integration
4. Establishment and leverage of startups

**智財與財務基礎概念培養(微型課程)　0.3　選　鍾智超**

1.創業初期財務規劃與資金管理
2.公司營運記帳模式
3.商標與專利智慧財產權於產品保護之應用

**Intellectual Pproperty and Financial Foundation Concept Training**
**0.3　E　C. C. Chung**

1. Financial planning and fund management in the early stage of entrepreneurship
2. Company operation accounting model
3. Application of trademark and patent intellectual property rights in product protection

**創新與創業實務(微型課程)　0.5　選　邱秋霞、郭嘉信**

本課程帶給學生實作演練的機會，與有經驗企業創業者直接接觸學習的機會。做中學，跟不同背景的人學習，理論與實務的驗證與應用。

**Innovation and Practical Entrepreneurship　0.5　E　C. S. Chiu, J. H. Guo**

This course may let students learning from practicing and learning from different eduction background

lmplementing what they learn from book.

# 產業增能微學堂新開課程中英文課綱

## 全興講座(1)(微型課程)　1　選　曾美珍

本課程提供學生學習全球水產產業概況及產業未來的發展趨勢。進行國外產業介紹、南向經驗與產業願景分享。從飼料原料採購、整合供應鏈到永續經營進行健康養殖的實務經驗傳承。

**Grobest Lecture(1)　1　E　M. C. Tseng**

This course provides students with an overview of the global aquaculture industry and the future of the industry. Conduct foreign industry introduction, southward experience and industry vision sharing. From the procurement of feed ingredients, the integration of the supply chain to the sustainable management of the practical experience of healthy farming.

## 全興講座(2)(微型課程)　1　選　曾美珍

學習水產養殖飼料產業的重要性及了解目前產業的人力需求，並提升學生進入產業的能力。課程內容著重於明瞭飼料業產業在水產養殖產業鏈中所扮演的角色與定位，現今及未來的飼料研發方向及現場實務經驗傳承等。

**Grobest Lecture(2)　1　E　M. C. Tseng**

Learning the importance of the aquaculture feed industry and understand the current manpower needs of the industry and enhance students' ability to immerse the industry. The content of the course focuses on the role and positioning of the feed industry in the aquaculture industry chain, the current and future feed research and development directions and on-site practical experience.

## 茶葉產業達人(微型課程)　1　選　賴宏亮

本課程主要內容在敘述茶之栽培、管理、收穫、製茶製程技術、沖泡方法、感官品評、用途及多元化產品開發等。

**Introduction to Tea Iindustry　1　E　H. L. Lai**

The main contents of this course will describe the culture and management, harvest, manufacture process of tea making, brewing method, sensory evaluation, usage and development of diversified products from tea.

## 新食材漢堡達人(微型課程)　1　選　張慧珍、趙偉廷、范慧華

本課程透過安心食品(摩斯漢堡)以日本職人的精神與西方科學化餐飲的能力，以行動學習，教授學生食材來源履歷、食品安全的知識，及結合新食材進行創新速食餐點的開發實務，為餐飲界培育優質餐點創新開發人才。

**Hamburger Innovation　1　E　H. C. Chang, W. T. Chao, H. H. Fan**

This course using know-how of Anxin Food (Mos Burger) the spirit of Japanese expert and food preparation skill with Western cooking science to teach students knowledge about traceable agricultural products (TAP), food safety, also using new ingredients to develop and innovate fast food by action learning. in order to cultivate high-quality cuisine innovation and development talents for the hospitality industry.

## 英國飯店管家達人(1)(微型課程)　1　選　賴佩均、張慧珍

英式飯店管家是國際間最具權威的管家服務系統，歷經數百年的服務理念與技能傳承，飯店管家的特色以恰到好處的服務，提供賓客舒適與難忘的服務體驗，結合餐飲專業理念介紹與飯店現場實作演練達到完美英國飯店管家服務訓練的結合。

**UK Butler Service Course(1)　1　E　P. C. Lai, H. C. Chang**

The English-style hotel butler is the most authoritative butler service system in the world. After hundreds of years of service concept and skill , the hotel butler features the perfect service, providing guests with comfortable and memorable service experience. This course combine professional concept of hospitality industry and actual practices to achieve the training of butler service in the British hotel.

### 健身產業經營達人面面觀(微型課程)　0.5　選　蘇蕙芬

本課程主要內容：1.首先帶領同學了解台灣健身產業的發展歷程，進而分析目前產業競爭現況。2.接著引導同學認識健身房經營的兩大議題：「法律」與「財務」，並掌握其中關鍵經營因素。3.最後為同學分析健身房經營的未來發展趨勢與關鍵成功因素。此外，搭配個案研討豐富課程內容，讓同學更有興趣學習且能融會貫通。

**The Overview of Fitness Industry Management　0.5　E　H. F. Su**

The main content of this course: 1. First of all, guiding students to understand the development of Taiwan's fitness industry, and then analyze the current status of industry competition. 2. Then guiding students to understand the two major issues of fitness business operation: "Law" and "Finance", and grasp the key operating factors. 3. Finally, analyzing the future trends and key success factors of fitness business management.

### 課輔教師認證課程(1)(微型課程)　0.6　選　吳雅玲

補救教學之理論與實務

**Curriculum of Afterschool Teacher Certificate(1)　0.6　E　Y. L. Wu**

Theories and practices of remedial teaching

### 課輔教師認證課程(2)(微型課程)　1　選　吳雅玲

1.國語課程與教學

2.數學課程與教學

**Curriculum of Afterschool Teacher Certificate(2)　1　E　Y. L. Wu**

1. Curriculum and teaching of Chinese

2. Curriculum and teaching of Math

## 大師開講新開課程中英文課綱

### 外交實務概論(微型課程)　0.2　選　邱秋霞

本課程探究複雜的外交實務現象以提升我們對日常生活的瞭解。本課程為學生提供外交體系與領域的基礎知識。課程將從外交官員的角度討論許多國家的政治和經濟狀況。本課程旨在培養學生對外交事務的興趣、增強他們對國際外交發展的基礎認識、提高學生對國家間外交關係重要性的認識。

**Introduction to Diplomatic Affairs　0.2　E　C. S. Chiu**

This course discusses the complicated phenomena of diplomatic affairs and promotes the understanding of our daily lives. This course provides students with fundamental knowledge of the diplomatic world. Politics and economy statuses of many countries will be discussed from diplomats' point of view. This course aims to foster students' interest in understanding international affairs; to enhance their perception over the development of diplomatic relationship among countries; and to raise students' awareness of the importance of diplomatic relations among countries

傳閱附件 1-8--本校各學院所屬各系(所)課程中英文摘要-語言中心

## 八、 語言中心

### 故事學英文：初級 2 選

本課程的目標為藉由故事增進學生的英文能力，尤其是閱讀能力。此門課不但充實學生的字彙量、提升閱讀能力，而且也介紹故事的結構，進一步培養對於文學藝術的興趣。除了閱讀文本以外，在課堂上我們也會透過不同的方式來進行，例如聽故事、講故事、演出故事、或是甚至寫出屬於自己版本的故事。這門課適合大一英文第一級和第二級程度的學生選修。

### Learning English through Stories for Beginners 2 E

This elective course aims to enhance students' English proficiency, particularly in reading, by engaging them in stories. It will not only help them expand their vocabulary and increase their reading comprehension, but will also introduce them to story structure and further nurture their interest in the art of literature. Besides reading texts, we will also approach stories in class through different activities, such as listening to stories, storytelling, acting stories out, or even writing our own versions of stories. The course is suitable for those who have achieved Freshman English level 1 or level 2.

### 批判閱讀與表達 3 選

本課程針對英檢中高級或以上學生，旨在訓練學生批判閱讀與思考，並培養完整表達之綜合論述（與寫作）能力。選讀教材多元，並回應聯合國永續發展目標(SDGS)重要社會或全球議題，如公平正義、難／移民、氣候變遷等，精選包括書報篇章、時事評論或創作敘述等，不同面向之經典或當代閱讀素材。期能借由分析閱讀與討論，增強學生文本理解與字彙運用能力；並結合所學閱讀策略，強化組織思考，能對重要議題表達獨立觀點之論述能力。

### Critical Reading and Written Expression 3 E

Critical Reading and Thinking is an advanced English course designed for upper intermediate or higher level students to improve their reading skills and cultivate a critical thinking mindset— through analytical reading, active discussions/debates, and writing, with an emphasis on argument analysis and information literacy. Students will learn to 1) interpret and evaluate the author's main point or claim on a variety of topics, 2) shape their own points of view by incorporating different perspectives, 3) to organise their thoughts logically with sound evidence and effective rhetoric, and 4) develop intellectual flexibility and tolerance for ambiguity. Materials used in this course will cover a wild variety of topics, including some cross-cutting issues addressed in The Sustainable Development Goals (SDGS)..

### 排灣族語生活應用(上) 2 選

透過排灣族語學習，認識並學習臺灣原住民族語言、文化、文學等知識內涵。
1.了解排灣族語言文化內涵；2.應用排灣族語溝通與學習；3.尊重社會多元文化價值。

### Paiwan Language for Daily Use (1) 2 E

Through learning Paiwan language, students can have the comprehensive knowledge of language, culture and literature of Taiwan indigenous peoples.

1. To learn cultural literacy in Paiwan language
2. To practice Paiwan language for communication and cultural exploring
3. To respect the cultural diversity in Taiwan society..

**服務業韓語　　2　選**

指導同學熟悉服務業韓文用語，學習在餐飲旅館領域常用場景之表達方式，以達到在赴韓觀光或從事服務業時之溝通能力。內容包括：用言活用與句型之傳授及練習，並使用影片等輔助教學。本課程不僅是語言之學習，在服務業領域溝通表達以及觀光禮儀也列入討論，期使同學擁有正確韓語表達能力外也兼具服務業知識及國際觀。

**Service Korean　　2　E**

The course is designed for students who are interested in developing their Korean skills for the purposes of traveling or working in the field of tourism and hospitality.

Students will learn 1.how to fill out important travel documents. 2.how to navigate their way through customs. 3.how to find service offered upon arrival at a destination. 4.how to get around in an Korean-speaking environment. 5. what to do for entertainment in various cities. At the end of this semester, students will have a strong understanding of Korean usage within the tourism industry. They'll also develop the ability to fully express their own ideas and present travel information in Korean clearly and effectively. In addition, reading and writing strategies will as well be improved through instruction and in-class exercises.

**印尼語(1)　　2 選**

1.啟發學生學習印尼語的興趣 (輕鬆愉快的氣氛學習印尼語)。
2.增進印尼文化的認識、理解、尊重與欣賞他人文化。
3.培養印尼語語言能力（聽說讀寫能力）。
4.培養學習方法與策略 (共同朗讀，對話，自我思考 )。
5.能使用印尼語說出簡單自我介紹。

**Indonesian (1)　　2　E**

1. Inspire student's interest in learning Indonesian with pleasant atmosphere.
2. Recognizing the Culture of Indonesia, understanding, respecting and admiring other cultures.
3. Cultivating the abilities in all four skills (listening, speaking, reading and writing).
4. Cultivating learning skills and strategies (reading together, conversation and self -thinking).
5. Able to make simple self- introduction and familiar with daily conversations in Indonesian language.

傳閱附件 2----木設系 109 學年「產學攜手合作計畫－室內裝修與家具實務專班」課程規劃案

# ．四年制 木材科學與設計系(產學攜手專班)109

## (一)教育目標

秉持木質資源材料及其纖維物應用科學知識與理念之發展特色，配合社會環境變遷及產業發展脈動，強化融入在生活環境的家具、木器生活用品、木竹工藝、紙品工藝等綠色產品之創作，以及木建築結構與空間環境規劃等的綠色設計，拓展文化創意產業，落實工廠實習訓練及實務技能，培育科學理論與文化內涵於設計之整合能力，以達技術職業教育之目標。

## (二)校定共同必修科目

| 中文科目名稱<br>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 | |
| 通識選項課程<br>General Education | 12 | 2 | 2 | | | 4 | 4 | | | 人文學科：2 門<br>社會科學：3 門<br>數理與應用科學：1 門 |
| 國文<br>Chinese | 4 | | | | | 2 | 2 | | | 國文(閱讀與寫作)(1)<br>國文(閱讀與寫作)(2) |
| 大一英文<br>Freshman English | 4 | 2 | 2 | | | | | | | 大一英文(1)<br>大一英文(2) |
| 英語聽講練習 101~102<br>English Listening & Speaking Practice | 2 | 1 | 1 | | | | | | | 英語聽講練習 101<br>英語聽講練習 102 |
| 憲法<br>Constitution | 2 | | | | | | 2 | | | |
| 體育選項<br>Physical Education | 4 | 1 | 1 | | | | | | | 一下修游泳 |
| 通識教育講座<br>Lectures on General Education | 1 | | | | | 1 | | | | 各系依序開課，開課學期不定 |
| 外語實務<br>Foreign Language Proficiency Test | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 畢業前修畢<br>通過標準依「外語實務課程實施要點」規定 |
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| | | | | | | | | | | |
| 合計 | 27 | 6 | 6 | 0 | 0 | 7 | 8 | 0 | 0 | |

（三）學院共同必修科目

| 中文科目名稱<br>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 | |
| 普通物理學<br>General Physics | 3 | | 3 | | | | | | | |
| 普通物理學實驗<br>General Physics Lab. | 1 | | 1 | | | | | | | |
| 生物統計<br>Biometry | 2 | | | | | | 2 | | | |
| 生物統計實習<br>Practice of Biometry | 1 | | | | | | 1 | | | |
| 實務專題<br>Special Projects | 2 | | | | | 1 | 1 | | | |
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| 合計 | 9 | 0 | 4 | 0 | 0 | 1 | 4 | 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 | |
| 應用材料學<br>Applied Material Science | 2 | 2 | | | | | | | | |
| 木材化學性質與利用<br>The Chemical Properties and Application of Wood | 2 | 2 | | | | | | | | |
| 木材化學性質與利用實習<br>The Chemical Properties and Application of Wood Lab. | 1 | 1 | | | | | | | | |
| 木材物理性質與利用<br>Wood Physical Properties and Utilization | 2 | 2 | | | | | | | | |
| 木材物理性質與利用實習<br>Wood Physical Properties and Utilization Lab. | 1 | 1 | | | | | | | | |
| 木材鑑別與商用木材<br>Wood Identification and Commercial Timber | 2 | | 2 | | | | | | | |
| 木材鑑別與商用木材實習<br>Wood Identification and Commercial Timber Lab. | 1 | | 1 | | | | | | | |
| 人因設計<br>Human factors design | 2 | | 2 | | | | | | | |
| 木材乾燥與保存實務<br>Wood Drying and Preservation Practice | 2 | | 2 | | | | | | | |
| 木材膠合與表面裝飾實務<br>Wood Adhesion and Surface Decoration Practice | 2 | | 2 | | | | | | | |
| 設計表現技法<br>Design Presentation | 2 | | | 2 | | | | | | |
| 設計表現技法實習<br>Design Presentation Practice | 1 | | | 1 | | | | | | |
| 成本估算與報價<br>Cost Estimate and Quotation Price | 2 | | | 2 | | | | | | |
| 室內裝修設計(1)<br>Interior Decoration Design (1) | 3 | | | 3 | | | | | | |
| 木工實習(1)<br>Woodworking Practice (1) | 2 | | | 2 | | | | | | |
| 基本設計<br>Basic Design | 2 | | | 2 | | | | | | |
| 基本設計實習<br>Basic Design Practice | 1 | | | 1 | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 家具設計<br>Furniture Design | 2 | | | | 2 | | | | | |
| 家具設計實習<br>Furniture Design Practice | 1 | | | | 1 | | | | | |
| 木工實習(2)<br>Woodworking Practice (2) | 2 | | | | 2 | | | | | |
| 電腦輔助製圖<br>Computer Aided Design Drawing | 3 | | | | 3 | | | | | |
| 家具製圖<br>Furniture Drawing | 3 | | | | 3 | | | | | |
| 產業實務實習(1)<br>Professional practice(1) | 2 | | | | | 2 | | | | |
| 木質環境學<br>Wooden Environment | 2 | | | | | 2 | | | | |
| 木質板應用實務<br>Wood-Based Processing and Application Practice | 2 | | | | | 2 | | | | |
| 木質材料自動化加工<br>Automated Processing for Wood-based Materials | 2 | | | | | 2 | | | | |
| 木質材料自動化加工實習<br>Automated Processing for Wood-based Materials Practice | 1 | | | | | 1 | | | | |
| 產業實務實習(2)<br>Professional practice(2) | | | | | | | | 2 | | |
| 產業實務實習(3)<br>Professional practice(3) | | | | | | | | 9 | | |
| 產業實務實習(4)<br>Professional practice(4) | | | | | | | | | 9 | |
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| 合　　計 | 70 | 8 | 9 | 13 | 11 | 9 | 0 | 11 | 9 | |

## (五)專業選修科目

| 中文科目名稱<br>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 | |
| 設計方法<br>Methodology of Design | 2 | 2 | | | | | | | | |
| 設計史<br>Design History | 2 | 2 | | | | | | | | |
| 設計概論<br>Introduction to Design | 2 | 2 | | | | | | | | |
| 色彩計畫<br>Color Scheme | 2 | | 2 | | | | | | | |
| 家具製作<br>Furniture Manufacturing | 4 | | | 4 | | | | | | |
| 室內裝修施工<br>Interior Decorating Construction | 4 | | | 4 | | | | | | |
| 電腦輔助設計(2)<br>Computer Aided Design (2) | 3 | | | | 3 | | | | | |
| 室內裝修設計(2)<br>Interior Decoration Design (2) | 3 | | | | 7 | | | | | |
| 家具設計開發<br>Furniture Design and Development | 4 | | | | | 4 | | | | |
| 電腦輔助製圖實務<br>Computer Aided Design Drawing Practice | 2 | | | | | 2 | | | | |
| 家具製造程序<br>Furniture Manufacturing Processes | 2 | | | | | 2 | | | | |
| 木材設計力學<br>Mechanics for Wood Design | 2 | | | | | 2 | | | | |
| 機能性木材應用<br>Functional Wood Application | 2 | | | | | | 2 | | | |
| 設計行銷與管理<br>Marketing and Management for Design | 2 | | | | | | 2 | | | |
| 展示設計<br>Display and Exhibit Design | 2 | | | | | | 2 | | | |
| 職業安全與衛生<br>Occupation safety and health | 2 | | | | | | 2 | | | |
| 合計 | 44 | 6 | 2 | 8 | 10 | 10 | 8 | | | |

# 木材科學與設計系(產專班)109
# Department of Wood Science and Design

## 一、必修科目

**05033 應用材料學　　2 必**

介紹工程及商用材料有關物理及化學性質。內容包括石材，鋼鐵材料、非鐵金屬材料、陶瓷材料、複合材料、玻璃材、瀝青材、纖維材、皮革材、塑膠材、奈米材等。並說明各種材料之應用場合，包括家具製造，室內裝潢、房屋建築、工業產品或日用品等，介紹各材料之成分、規格、種類、耐久性或缺點特性，使能夠了解正確利用材料的方法，並導引生態及綠色概念，同時啟發木材與各種材料複合之產品設計概念。

**05033Applied Material Science　　2R**

An introduction to physical and chemical properties and applications of engineering or commercialized materials are covered. The courses cover stone, steel, glass, fiber, leather, nonmetal materials, plastic, composites, and bituminous materials. The usage of materials is demonstrated in furniture making, interior decoration, housing construction, and industrial products. In order to better understanding the proper use of materials and related products, the information of the component analysis, durability, specification, shortage, and characteristics of materials is provided. The concept of biology and green materials is introduced, and the concept of products design in combining wood and other materials is initiated.

**23321 木材化學性質與利用　　2 必**

本課程旨在講授木材內主要及次要化學組成分之基本知識，詳述纖維素、半纖維素、木質素及萃取成分等之結構性質及利用方法，期使學生充分瞭解影響木材化學性質之機制，進而達成合理化之化學工業應用。

**23321The Chemical Properties and Application of Wood　　2R**

The course is designed to fulfill the needs of the forest products students to be better acquainted with the fundamental knowledge of various major and minor chemical components in wood. The molecular structure, properties as well as utilization methods of cellulose, hemicellulose, lignin and extractives will be fully described to enable students to understand the mechanisms that control the properties and to manipulate those properties to suit industrial needs.

**23322 木材化學性質與利用實習　　1 必**

配合木材化學性質與利用有關理論之介紹，設計八項實習使學生從動手操作中體會各種木材化學成分之不同性質。實習內容包括試材之製備木粉、含水率、水萃取物、1%NaOH 萃取物、灰分、乙醇甲苯萃取物、全纖維素與木質素等之定量分析。

**23322The Chemical Properties and Application of Wood Lab.　　1R**

Eight labs are established to enable the students fully understand the different properties of various wood chemical constituents lectured in the classroom. The contents include：preparation of testing materials, moisture content determination of wood meal, analysis and determination of water, 1% NaOH and ethanol-toluene extractives, measurement of ash, determination of holocellulose and lignin.

**22226 木材物理性質與利用　　2 必**

本課程主旨在使學生體認木材的物理性質的特徵，諸如：木材之比重、水分特性(吸脫濕遲滯、收縮膨脹及吸水性) 、熱性質(比熱、熱傳導及熱擴散) 、音響性質(吸音率、吸音特性及遮音特性) 、電氣特性(導電性及誘電性)等，俾有助於其加工製作與設計材料運用之理解。

**22226Wood Physical Properties and Utilization　　2R**

The purpose of the course is introducing the physical properties of wood in the process and design. The contents include: wood specific gravity, wood-moisture relations of wood, thermal properties of wood, acoustic properties of wood, electrical properties of wood.

**22227 木材物理性質與利用實習 1 必**

本課程使學生熟悉木質物理學性質之測定方法，其內容包括木材之比重,含水率測定、木材之吸、脫濕的含水率遲滯現象、吸濕膨脹率及吸水膨脹率之測定、木材之熱傳導率測定及計算、木材之吸音率測定及計算、木材之誘電率及導電性測定及計算。

**22227Wood Physical Properties and Utilization Lab. 1R**

The objective of laboratory work is to teach the students who become familiar with the methods of measuring the physical properties of wood. The contents include determination of specific gravity and moisture content, observation of moisture absorption and desorption hysteresis measuring the and measurement of shrinkage and swelling, determination of thermal conductivity calculation, determination of sound adsorption coefficient, dielectric properties and electrical conductivity.

**22228 木材鑑別與商用木材 2 必**

本課程之目的在使學生了解木材解剖與鑑定之意義、木材之種類及鑑別方法、木材之巨視構造與微視構造及重要商用木材之特徵。針對各地區具有經濟用途及開發潛力的木材特徵與用途。

**22228Wood Identification and Commercial Timber 2R**

Introducing the definition of wood anatomy and identification, the methods of identification, the macrostrcture and microstructure of wood, the characteristics of important commercial timber.

**22229 木材鑑別與商用木材實習 1 必**

木材之解剖及鑑定乃在研究木材內部及外部形態之一門科學，對於木材之各種工藝利用，首先必須考慮木材之構造，因此不僅在樹種之鑑定乃必要，同時與其物理及機械性質具密切之關係。本實習課程包括下列項目：木材外觀特徵之觀察、木材鑑定別之方法及標本觀察之準備、商用木材巨視與顯微構造之觀察。

**22229Wood Identification and Commercial Timber Lab. 1R**

The anatomy and identification of wood is a science that explores the internal structure and external morphology of wood. The structure of wood must first be taken into consideration with regard to technological utilization of wood. And thus, it is necessary not only in the identification of wood, but also in understanding the physical and mechanical properties of wood. This course mainly consists of the following parts: 1.the methods of wood identification and preparation of specimens, 2.the observation of gross feature and microstructure of commercial timber.

**22936 人因設計 2 必**

課程規劃以培養學生具有以人類行為與心理之角度去探討產品、介面與互動等相關研究之能力。人因設計為探討人類生理與心理因素，感知、動作與行為之訊息、特性及能力，將之應用在設計上。使產品不但能達成使用者目標，且易於使用，並讓使用者對使用過程滿意，進而產生品牌忠誠度。本課程將介紹針對以產品之人機介面設計與使用者介面為重點，包含人機互動概念、原理與手法，並探討如何融入於產品與系統的設計過程中，設計出更符合人性的產品，進一步提升產品使用性與魅力。

**22936Human factors design 2R**

Curriculum planning to develop students with the human behavior and psychological perspective to explore the product, interface and interaction related research capabilities. Human factors designed to explore human physiological and psychological factors, perception, action and behavior of the message, features and capabilities, will be applied to the design. So that the product not only achieve user goals, and easy to use, and allow users to satisfaction in the user's process, resulting in brand loyalty. This course introduces how to design a more human-friendly product that focuses on the design and user interface of human-machine interface, including concepts, principles and practices of human-computer interaction and how to integrate it into the design process of products and systems. Further enhance product usability and charm.

**23323 木材乾燥與保存實務 2 必**

本課程介紹有關木材之乾燥以及保存處理之性質、原理、實際作業方法，使學生具有實際操

作之技術並期獲得最低之處理成本與最佳之成品品質。常用之乾燥方法有氣乾及窯乾兩種方法。而木材保存常用之方法有空胞法(有魯賓法及勞力法)及滿胞法。

**23323Wood Drying and Preservation Practice 2R**

This course presents information on wood drying . Related treating properties, principles and practical techniques that can be applied to the drying and preservation of lumber, dimension stock and many special items will be emphasized in order to reduce cost of treatments and maintain high quality of wood products. There are two major wood drying processes(1)Air dry(2)Kiln dry. Also there are two General classes of wood preservatives: such as full-cell (Bethel) and empty-cell (Ruepping) processes.

**23324 木材膠合與表面裝飾實務 2 必**

本課程之內容設計主要在訓練學生瞭解木材工業常用的膠合劑之種類、反應化學、使用方法、硬化後膠膜性質，以及包括木工塗裝材料、塗裝系統、塗裝機具、特殊塗裝方法、塗裝缺點及其對策等。同時也教導學生木材薄片貼面與實木鑲嵌之實務技能。

**23324Wood Adhesion and Surface Decoration Practice 2R**

This course is designed to acquaint students with types of adhesive commonly used in the wood industry, their reaction chemistry, application methods and properties of glued members, and with finishing materials, finishing systems, operating systems, special finishing methods, finishing problems and remedies, etc.. And also to guide student making the practical skills of wood veneer overlay and wood inlay.

**20747 設計表現技法 2 必**

設計表現技法課程的主要目的是訓練學生熟練各種圖形的繪製技巧。課程內容包含設計概念與設計圖的表達方法。課程最主要的部分是各種圖形的繪製方法與技巧的熟習。設計表現技法主要是作為設計表達的進階訓練，包括平面圖、立面圖、剖面圖及透視圖的繪製。此外本課程也訓練學生配合設計圖面練習模型製作。本課程是學生未來從事空間設計、室內設計、產品設計的基礎。

**20747Design Presentation 2R**

The objective of this course is to familiarize the students with the presentation method of design. Course content includes design concept and the presentation of design in drawing. The core of the course is familiarization of the method and skills of diagrams drawing. Design Drawings Presentation Practicum provides the advance training of presenting design ideas in two-dimensional, three-dimensional, section and perspective drawings, as well as producing. This course is a pre-requisite for students pursuing a career in space planning, interior design, merchandise design, and industrial design.

**20748 設計表現技法實習 1 必**

設計表現技法實習是配合設計表現技法課程，主要目的是訓練學生熟練各種圖面的繪製技巧。課程內容包含設計概念與設計圖的表達方法。課程最主要的部分是各種圖面的繪製方法與技巧的熟習。設計表現技法主要是作為設計表達的進階訓練，包括平面圖、立面圖、剖面圖及透視圖的繪製。此外本課程也訓練學生配合設計圖面練習模型製作。本課程是學生未來從事空間設計、室內設計、產品設計的基礎。

**20748Design Presentation Practice 1R**

Design Presentation Practicum is combined with the Design Presentation course. The objective of this course is to familiarize the students with the presentation method of design. Course content includes design concept and the presentation of design in drawing. The core of the course is familiarization of the method and skills of diagrams drawing. Design Drawings Presentation Practicum provides the advance training of presenting design ideas in two-dimensional, three-dimensional, section and perspective drawings, as well as producing. This course is a pre-requisite for students pursuing a career in space planning, interior design, merchandise design, and industrial design.

**23328 成本估算與報價 2 必**

本課程係提供學生有關利潤與成本觀念，並進而估算、分析和控制製品之成本，以增加對經

營者之信心。其講授內容包括有：成本結構的要素與分類、成本估算的步驟、如何估算材料成本、如何估算人工成本、如何估算製造費用、如何估算銷售費用、如何決定產品的總成本與單位成本、緊急訂單的產品如何估算成本、成本估算與事前降價成本規劃、成本估算與產品報價策略等等。

**23328Cost Estimates and Quotes Price 2R**

The aim of this course is training the students about the concept of profit and costs, and thus estimating the cost, analysis and control products, in order to increase the confidence of the operators. It's offered to cover: Factor and classification on cost structure, Cost estimating steps, How to estimate materials cost, How to estimate labor cost, How to estimate manufacturing expenses, How to estimate selling expense, How to determine total cost and unit cost on the product, How to estimate the product cost under emergency orders, Cost estimates and cost price reduction plan in advance, Cost estimates and product quotes strategy, and so on.

**22949 電腦輔助設計(1) 3 必**

本課程以教導學生學習與使用電腦 3D 繪圖軟體，使同學具備製作出各式各樣的電腦 3D 模型，並應用於設計課程中。且藉由對不同案例的繪製練習，讓學生們更能充分運用電腦 3D 繪圖軟體的優點，加以整合設計出出色的作品來。

**229498Computer Aided Design (1) 3R**

Guiding the students familiar with skills using computer 3D drawing software. Training the attendants to handle or create various types of 3D models and applied to design courses. The attendants can fully employ the advantages of computer 3D sketch software through the practice on several different case studies and produce an integrated design project.

**23238 室內裝修設計(1) 3 必**

主要課題爲室內各空間基本設計規劃，包括客廳、餐廳、衛浴、臥室等，課程內容包含空間設計圖學表現、配置原則、不同類型案例解析，本課程是學生未來從事空間規劃、室內設計與室內裝修等工作的基礎。本課程是室內設計基礎課程，教學目標為瞭解室內設計基本原理，建立空間設計概念與方法並實際應用於室內設計，包含室內設計製圖及表現技法訓練，並進行室內設計實作。

**23238Interior Decoration Design (1) 3R**

The objective is to teach the conception of space design that about living room, kitchen, bathroom and bedroom. The course introduces space planning and design, design method, the different cases study, as well as discussions on themes such as the style, color, texture, functions, material and working procedures of space design. Through the training in this course, students will acquire and develop in the concept of space design, creativity and presentation skills. This course is the foundation to all students pursuing a career in space planning, interior design and interior decoration.

**22937 木工實習(1) 2 必**

本課程旨在提供家具工廠一貫作業所使用的機械之基本原理、操作技術與安全衛生之必須知識，以訓練學生熟知並練習各種機械之正確操作與應用為目的。本課程分為：機械原理及木工機械總論，鋸切機械、鉋切機械、銑削機械、鑽孔機械、成型機械、研削機械、加壓機械(油壓或壓縮空氣機)及加熱設備(含電熱、蒸汽熱源、大電流發熱、微波及高週波發振機等)等之選用、調整、操作及基本維護。

**22937Woodworking Practice (1) 2R**

The topics of this course are to introducing the machinery of furniture manufacture. It includes: the principles of machinery, woodworking machine, safety and healthy of processing. Introducing contents the selection, operating, adjustment and maintain of sawing, jointing, planning, routing, shaping, drilling, moulding, tennoning, sanding (grinding), pressing (by hydraulic or air compressor) and heating (by electronic heater, steam boiler, high current, microwave or high frequency generator) equipments, in this course.

**21439 基本設計 2 必**

基本設計是學習設計的基礎學科，課程目標在建立美學概念並將設計原理與方法應用於設計，包括平面、立體與空間構成的設計實作。課程內容包含設計概論、設計史、美學原理，並探討設計的造形、色彩、質感、空間、機能等主題。本課程的訓練有助於建立學生正確的美學概念，激發創意思考能力並熟練表現技巧，本課程是學生未來從事空間設計、室內設計、產品設計、工業設計等工作的基礎。

**21439Basic Design 2R**

Basic Design is the introductory course of design studies. The objective of the course is to establish concept of Esthetics and to apply design theory and method to the actual design including the operation in constructing two-dimensional, three-dimensional and space designs. This course content includes introduction to design, the history of design and theory of Esthetics, as well as discussions on themes such as the style, color, material, space and functions of design. Through the training in this course, students will acquire and develop in the concept of Esthetics, creativity and presentation skills. This course is the foundation to all students pursuing a career in space planning, interior design, merchandise design, and industrial design.

**21440 基本設計實習 1 必**

基本設計實習是配合基本設計課程，讓學生從事基本設計之操作實習，從設計的操作、觀摩與討論過程增加對設計的認識與經驗。主要課程內容包含平面造形設計之構成方法與形式，以及立體造形設計之構成方法與形式。本課程之進行以實作與講評討論為主要教學方式，訓練學生將所學到的基本設計原理，藉由各種材料的質感與色彩的操作，具備多元化造形設計表現的能力。

**21440Basic Design Practice 1R**

Basic Design Practicum is combined with the Basic Design course. The practicum allows the students to apply Basic Design in practice. Students will acquire further knowledge and design skills through the practice, demonstration and discussions offered in the practicum. The content of this course includes the method and style in constructing two-dimensional and three-dimensional designs. Lectures will be conducted in the form of a practicum, which will require the students to practice basic design theories with various materials and color schemes, to equip the students with the capability of creative design in various styles.

**20564 家具設計 2 必**

本課程主要著重於引導學生從設計、專門方案到家具成品之完整設計過程的觀念。講授內容包括：(一) 設計觀念的發展。(二) 定義設計產品的範疇。(三) 產品使用的功能標準。(四) 研擬計畫書。(五) 組件材料的選擇。

**20564Furniture Design 2R**

This course is intended to be a practical guide to planning processes, of concept through design, shop plans and finishes. A sequence of the custom furniture design process is presented in the following chapters: (1) Developing the concept — A menu of ideas from what has been done before, or created in your own style — get the creative juices flowing. (2) Defining the scope — Temper the concepts with the realities of your resource — time, interest, capabilities and shop space—for the level of complexity. (3) Applying standards — Follow or depart from convention. Look at size and stature of the user-pleasing proportions, style relationships. (4) Committing to paper — Lock in your design, adapting plans and photos, preplanning construction steps. (5) Converting to parts — Select best woods, mill cuts, joinery techniques.

**20565 家具設計實習 1 必**

本課程主要訓練學生從設計、專門方案到家具成品之實際操作為基礎，使其熟悉完整設計過程並透過實習作業的練習，加深學生對家具設計與開發之能力。實習內容包括：(一) 設計觀念的發展。(二) 定義設計產品的範疇。(三) 產品使用的功能標準。(四) 研擬計畫書。(五) 組件材料的選擇。

**20565Furniture Design Practice 1R**

This course mainly focuses on the student practical operation of design and specialized programs to finished furniture. It is familiar with the complete design process and enhances that the students

learn to design and develop furniture through practical exercises. The practice covers: (1) Developing the design concepts; (2) Defining the scope to design products; (3) Applying functional standards to design products; (4) Committing to planning paper; (5) Converting to part materials.

**22939 木工實習(2)** **2 必**

本課程以單元訓練為主，教導學生熟悉各種手工具及木工機械之作業法，使同學具備簡易的木材加工技能，以從事簡易木材加工工作，並達家具木工丙級技術士的技能，俾應用於木質工藝製造工程上。

**22939Woodworking Practice (2)** **2R**

The objectives of this course are to acquaint the students with basic woodworking techniques and to enhance their ability to pass the C grade qualified exam held by the Committee of Labors.

**55069 電腦輔助製圖** **3 必**

本課程以電腦輔助繪圖之基本概念，訓練學生實際操作 AutoCAD 電腦軟體之各種指令，使其熟悉電腦繪圖之基本程序，加深學生對設計製圖之能力。其內容包括：AutoCAD 基本操作、設定繪圖環境、繪圖規範之準備、基本繪圖指令、編修指令、應用幾何技巧、正視圖與透視圖繪製、尺寸標註方法、立體圖、3D 立體圖表現、設定繪圖機與出圖等。

**55069Computer Aided Design Drawing** **3R**

This course is to introduce the basic concept of computer aided drawing and to help the student practice using the AutoCAD software package. Learning is reinforced through class exercises, homework assignments that can be used to measure student understanding in woodworking drawings. Its content includes: AutoCAD basic operating, setup the drawing environment, normal preparation of drawing, basic drawing commend, edited commend, applying skills of geometry, projection drawing to draw, method of dimensions and marks , axonometric drawings, present to 3D axonometric drawings, plotting drawings etc..

**22947 家具製圖** **3 必**

本課程主要內容在訓練學生針對家具產業繪圖技術人員的職能強化，課程中由桌、椅、櫃、廚、床與生活用品的設計圖繪製到結構設計探討分析後的工作圖繪製，再由工作圖解構後的生產零件圖繪製與裝配組合圖繪製技巧訓練。

**22947Furniture Drawing** **3R**

The main content of this course is to train students who reinforce the functions of drawing technicians in the furniture industry. The courses training the design from the sketch of tables, chairs, cabinets, kitchens, beds and household products which could be converted to the working drawings for the analyzing and analyzing structural designs. Furthermore, the graphical production after the production of parts drawing and assembly combination drawing skills training.

**22746 產業實務實習(1)** **2 必**

**22747 產業實務實習(2)**

落實學生學以致用，並加強縮短四技學程的學生學用落差，而進行培育相關實務工作經驗之一系列實習課程。

**252746Professional practice (1)** **2R**

**252747Professional practice (2)**

Through this course, students can apply their knowledge to implement and cultivate a series of relevant practical work experience in this internship programs.

**21305 木質環境學** **2 必**

本課程之目的係使學生了解室內空間應用木質材料裝修時，具有諸多優良之居住特性，是其它無機質材料所無以比擬的，究竟木材具有那些優良之居住特性及其缺點之如何改善是本課程之方向。內容包括國內木材之蓄積與生產概況、木材與建築、木質材料之特性與用途、木質地板之特性、感覺的評價、木材對居住環境之調節特性、木質材料之吸音特性、木質材料之遮音、木質材料之耐燃處理、木材之防蟲、蟻、蟎類處理。

**20305Wooden Environment** **2R**

The objective of the course is to let students appreciate the many advantages of that the wooden materials applied to indoor wood use and reduction of human health problems. The prominent qualities demonstrated by wood materials in residential use will be explained and compared with those of inorganic construction materials. Content, Growing stocks and production of wood in Taiwan, Characteristics and uses of wood panel materials, Wood and architecture, Characteristics of wooden floors, Evaluation of feelings, Conditioning characteristics of living environment for wood, Characteristics of sound absorption for wood panel materials, Sound transmission of wood panel materials, Fire-resistance of wood panel materials, Living environment and health, Decay-proofing, ant-proofing and mite-proofing treatments of wood.

**22327 木質板應用實務 2 必**

本課程旨在傳授學生合板、木芯板、層積材、單板層積材、粒片板及纖維板等以木質材料為原料的初級加工產品(木質複合材料)之性質，使學生瞭解市售木質複合材料之特殊使用性能，充分應用於設計實務，增進材料應用範疇等有關知識。

**22327Wood-Based Processing and Application Practice 2R**

The course is designed to acquaint students with the utilization and performance of plywood, lumber core plywood, laminated wood, laminated veneer lumber, particleboard and fiberboard …etc., which are the primary processed products of wood based materials.

**20099 木質材料自動化加工 2 必**

傳授木材工業自動化加工之基礎知識，簡介機械視覺、自動演算及數值控制等概念。主要內容為教導木工用電腦數值控制加工機，含數值控制基本觀念、電腦數值控制花鉋機之指令、程式設計、定位模之製作、立體圖文繪製及加工，雷射加工機之應用軟體、向量圖、點陣圖、外框、封閉區塊、開口區塊、交叉區塊、雷射切割及雷射雕刻，立體圖文自動轉換及逆向工程設備之應用等。培養學生成為自動化加工知行能力兼備的專業人才

**20099Automated Processing for Wood-based Materials 2R**

Introducing the state of art for woodworking processing automation, machine vision, automatic computing, numerical control and related background. The topics covers programming practice for (computer) numerical controlled machine, components of woodworking CNC router, and fundamental procedures on programming numerically, operations of Laser engraver, CNC router and relate application.

**20100 木質材料自動化加工實習 1 必**

訓練學生具備自動化加工之基本知識及實務應用電腦數值控制加工機械、電腦輔助軟體及立體物件逆向工程等能力。設計為校內實習，練習自動化加工用電腦軟體、機械視覺逆向工程設備、電腦數值控制花鉋機及雷射加工機；校外實際參與生產線，見習木料自動鋸切與分配系統、自動演算裁板系統、數控花鉋機、全自動木質板加工系統及化妝單板生產線等。

**20100Automated Processing for Wood-based Materials Practice 1R**

Trainning students to know the automation related background. The topics covers compus courses and furniture factor courses. Compus couses: leraning the computer programs, operations of machine vision equipment, CNC router and Laser engraver. Furniture factor courses: automatic sawing and admeasuring system, automatic computing system of panel sawing, NC router, panel processing automation system and the production line for fancy veneer

**22748 產業實務實習(3) 9 必**

**22749 產業實務實習(4)**

落實學生學以致用，並加強縮短四技學程的學生學用落差，而進行培育相關實務工作經驗之一系列實習課程。

**22748Professional practice (3) 9R**

**22749Professional practice (4)**

Through this course, students can apply their knowledge to implement and cultivate a series of relevant practical work experience in this internship programs.

# 二、選修科目

## 01 設計方法 2 選

本課程是學習設計的基礎學科，課程目標在建立設計原理概念並將設計美學原理應用於實際的設計，課程內容包含設計原理與方法概論、美學原理、設計流程，並探討設計的造形、色彩、質感、空間、機能等主題。本課程的訓練有助於建立學生正確的設計概念，激發創意思考能力並熟練表現技巧，本課程是學生未來從事空間設計、室內設計、產品設計、工業設計等工作的基礎。

## 01 Methodology of Design 2S

The course is the introduction of design studies. The objective of the course is to establish concept of design theory and to apply design esthetic theory to the actual design. The course content includes introduction to design theory and method, the theory of Esthetics, process of design, as well as discussions on themes such as the style, color, material, space and functions of design. Through the training in this course, students will acquire and develop in the concept of design, creativity and presentation skills. This course is the foundation to all students pursuing a career in space planning, interior design, merchandise design, and industrial design.

## 02 設計史 2 選

本課程教學主要目的在引出一些設計史的重要設計年代、代表性的設計師思考理念、設計作品和重大設計事件的原由等。藉由歷史觀點，認識「設計」的脈絡演變，進而探討設計的本質。思考歷史的變化過程，設計與社會、政治經濟等社會文化背景之間的因果關係。透過對設計師的了解建構設計與鑑賞設計作品的能力，使學生建立自我批判的能力。

## 02Design History 2S

The main purpose of this course teaching leads to some important design age of the design history, representative designers to think about ideas, design work and major design events and so on. From a historical point of view, we understand the evolution of “design” to explore the nature of design. Thinking about the process of change in history, design and social, political and economic and other social and cultural causal relationship between. Through the understanding of designers to construct design and appreciation of the ability to design work, so that students build self-critical ability.

## 03 設計概論 2 選

設計概論為設計領域的基礎必修學科，旨在引導設計系大一學生，在習得設計實踐必備之理論知識與技法之前，先建立有關設計專業領域的基本概念。探討主題將從設計的定義與範圍進行設計探討包括生活設計中的理解與審美、設計教育，透過國內外設計產品賞析培養自身對工業設計的詮釋與美學建立，鼓勵學生從課題中自主思考與學習。

## 03Introduction to Design 2S

Design Introduction is the basic compulsory subject in the field of design. It aims to guide a university student in design department to establish the basic concepts of design profession before acquiring the theoretical knowledge and skills necessary for design practice. The theme of the discussion will be from the definition and scope of design to explore including understanding of life design and aesthetic education, design education through the appreciation of design products at home and abroad to cultivate their own interpretation of industrial design and aesthetics, to encourage students to think and study independently from the subject.

## 04 色彩計畫 2 選

本課程主要講授之重點在於培養學生對色彩的基本認識與激發學生自我的色彩應用技巧。基本上授課內包含：認識色彩、色彩體系、色彩混合與對比、色彩感覺與應用、配色原理與色調分析、色彩計畫的專題製作運用。其次分組報告：同學以自由分組方式對於色彩的使用實例進行研究，並於課堂上發表各組之研究成果，並繳交書面報告及作品呈現。

**04Color Scheme** **2S**

The main focus of this course is to give students a basic understanding of color and stimulate student self-color application skills. Basically, the lectures include: production of knowledge, color system, color mixing and contrast, color perception and application, color matching principle and color analysis, and color planning. The second, group report: students to use free grouping of examples of the use of color research, and in the classroom published research results, and provide a written report and presentation.

**05 家具製作** **4 選**

本課程以單元訓練為主，教導學生熟悉各種手工具及木工機械之作業法，使同學具備簡易的木材加工技能，以從事簡易木材加工工作，並達家具木工丙級技術士的技能，俾應用於木質工藝製造工程上。

**05Furniture Manufacturing** **4S**

The objectives of this course are to acquaint the students with basic woodworking techniques and to enhance their ability to pass the C grade qualified exam held by the Committee of Labors.

**室內裝修施工** **4 必**

本課程目的在教導學生認識室內裝修工程常用材料與加工性質，並能依照裝修施工圖運用木工機器與手工具，完成施作及組裝簡易木製成品，諸如櫥櫃、地板、天花板、隔間...等相關工程。講授的內容包括室內裝修工程之基本知識、室內裝修工程常用材料、裝修施工圖的讀圖、施工材料的核算、室內裝修結構施工技術、室內裝修飾面施工以及室內裝修的景觀布置等。習作內容則包括天花板結構施工、牆面裝飾結構施工、柱體裝飾結構施工、木質地板結構施工、連接收口技術、玻璃裝飾施工、門窗施工、窗簾安裝、室內電器安裝以及各種材料之室內裝飾面施工等。

**Interior Decorating Construction** **4S**

This course purpose is training the students who could realize the material of interior decoration project and working property, and to use the woodwork machine and hand tool according to fitting up the construction drawing, Finish the operation and assemble on the simple wooden products. Such as the cabinet, floor, ceiling, and compartment etc.. The course includes the interior decoration project, material of interior decoration project, fitting up construction drawing, constructed checking and calculating of material, fit up interior decoration technology, constructed surfacing of interior decoration, constructed the views of interior decoration etc..The exercise includes: constructed the ceiling structure, constructed the wall structure, constructed cylinder body structure, constructed the wooden floor structure, receiving vocal imitation skill, constructing glass decorate, constructing doors and windows, curtain install, indoor electric apparatus install and constructed the material of interior decoration on surfaces etc..

**電腦輔助設計(2)** **3 選**

本課程以教導學生學習與使用電腦 3D 繪圖軟體，使同學具備製作出各式各樣的電腦 3D 模型，並應用於設計課程中。且藉由對不同案例的繪製練習，讓學生們更能充分運用電腦 3D 繪圖軟體的優點，加以整合設計出出色的作品來。

**Computer Aided Design (2)** **3S**

Guiding the students familiar with skills using computer 3D drawing software. Training the attendants to handle or create various types of 3D models and applied to design courses. The attendants can fully employ the advantages of computer 3D sketch software through the practice on several different case studies and produce an integrated design project.

**室內裝修設計(2)** **7 選**

主要課題為”住宅空間”設計，本課程延續室內裝修設計(一) 課題內容，加強學生在室內空間設計規畫之手法及概念，並搭配室內設計風格、色彩、質感、機能、裝修材料、施工方法等。本課程的訓練有助於建立學生正確的空間設計概念，激發創意思考能力並熟練表現技巧。

**Interior Decoration Design (2)** **7S**

The major subject of this course is “space design of residence”. In this course we discuss the difference design style, color, material, functions and interior decoration. Through the training in this course, students will acquire and develop in the concept of space design, creativity and presentation skills.

**家具設計開發** **4 選**

本課程係結合當前家具行業發展的新形勢與新特點，針對家具企業對家具設計專業人才素養的需求，按照企業設計實際環境必備的基本知識結構，以實質的功能與形態、藝術與技術、生產與營銷等諸多要素經辯證而獲得一整套關於生活方式的解決方案。講授內容則有系統的導引家具材料、家具接合方法、家具結構設計、家具藝術風格的演變、家具造型設計、家具透視圖表現技法、家具開發實務等。

**Furniture Design and Development** **4S**

This course is a combination of the new situation and new features on the current furniture industry development. To accompany the furniture industry raised the demand for professionals in furniture design. The basic structure of knowledge in accordance with the corporate design of the actual environment necessary. To the actual function and form, art and technology, production and marketing, and many other elements of dialectical obtained through a set of solutions with regard to lifestyle. The teachings of a guide system furniture materials, furniture joining method, furniture contruction design, the evolution of furniture artistic style, furniture modeling design, furniture perspective performed techniques, furniture development practice, etc..

**23063 電腦輔助製圖實務** **2 選**

本課程以電腦輔助繪圖之基本概念，訓練學生實際操作 AutoCAD 電腦軟體之各種指令，使其熟悉電腦繪圖之基本程序，加深學生對設計製圖之能力。其內容包括：AutoCAD 基本操作、設定繪圖環境、繪圖規範之準備、基本繪圖指令、編修指令、應用幾何技巧、正視圖與透視圖繪製、尺寸標註方法、立體圖、3D 立體圖表現、設定繪圖機與出圖等。

**23063Computer Aided Design Drawing Practice** **2S**

This course is to introduce the basic concept of computer aided drawing and to help the student practice using the AutoCAD software package. Learning is reinforced through class exercises, homework assignments that can be used to measure student understanding in woodworking drawings. Its content includes: AutoCAD basic operating, setup the drawing environment, normal preparation of drawing, basic drawing commend, edited commend, applying skills of geometry, projection drawing to draw, method of dimensions and marks , axonometric drawings, present to 3D axonometric drawings, plotting drawings etc..

**家具製造程序** **2 選**

本課程之主旨除了探討一般有關家具的製造技術外，更積極培養訓練學生對家具製造之程序、生產速度及各種工廠設備與製造系統之整合觀念，使學生能靈活運用在實際家具的生產作業。其講授內容包括：家具工業概況、家具工廠組織、木料之進廠、儲存及乾燥、配料間的加工、配料間的木料利用、配料間的生產、薄片間及其加工、細作間及其生產管制、組合間作業、塗裝間作業、打蠟及包裝間作業、倉儲運輸管理、製作家具之成本分析等。

**Furniture Manufacturing Processes Practice** **2S**

The intent of the course is to enable students to develop techniques and integrated manufacturing concepts in the furniture industry. It covers: introduction of the furniture industry, organization of a furniture factory, lumber receiving, storage and drying,: process, lumber utilization, production of parts at the rough end, veneering components, machining parts, production control, assembly, finishing methods, the finishing conveyor, rubbing and packing, warehousing and shipping, the cost of manufacturing furniture, and so on.

**30282 木材設計力學** **2 選**

首先教導材料之基本應力及應變觀念以及求解方法，包括平面至三維之應用。導入向量觀念求解及物件受力之靜力問題求解，同時探討基本結構受力靜定求解方法。其次教導木材基本之抗拉、抗彎、抗壓、抗剪特性，以及相關之影響因子。同時，瞭解木材在工程應用容許強度之推

導以及安全係數之觀念。

**30282Mechanics for Wood Design 2S**

Introduces the concepts of stress and strain of materials and the related solving approaches. The application on plane and three dimension cases are covered. The vector concept is introduced to solve static problems for objects subjected to external forces. Basic determinant problems for simple structure are covered. The fundamental characteristics of tensile strength, bending strength, compressive strength, and shearing strength of wood materials with related influential factors are demonstrated. The derivation of allowable stress and the concept of safety factor in the engineering application for wood are guided.

**機能性木材應用 4 選**

本課程乃針對在使用木材過程中產生主要缺陷之認識，導引學生利用物理和化學處理進行機能性改良的機制，瞭解其製備原理、過程、性質和用途，以增進木質材料的合理、高品質和設計材料運用之途徑。講授內容包括有木材強化、木材/金屬複合材料製造、木材阻燃、木材的尺寸安定性、木材軟化和彎曲、木質陶瓷、木材變色防止、染色技術以及木塑複合材料等。

**Unctional Wood Application Practice 4S**

This course is introducing the wood defects in the manufacture processes which would affect the mechanism of physical and chemical processing for the functional improvements. To understand the preparation principle, processes, properties and uses, to promote a reasonable application, high-quality and design materials for the use of wood products pathway. The contents including wood-densitified, wood / metal composite materials, wood fire-resistance, wood dimensional stability enhancement, plastics and bending wood, wood ceramics, wood discoloration and staining techniques, as well as the wood-plastic composite materials.

**設計行銷與管理 2 選**

本課程以經營戰略的角度於設計過程中導引學生技術創新與新產品開發活動，並密切關注建立開放的組織架構以吸納全方位的創新資源，強調設計企業的知識管理和知識產權管理。同時還吸納了當今創新非常重要和關鍵的開放式創新的思考和企業間動態聯盟的思想，並準備了足夠的案例幫助學習與實踐創新管理的模式。課程內容涵蓋 3 個主題：創新管理的概念、技術與知識管理與新產品開發和行銷。

**Marketing and Management for Design 2S**

The aim of this course is training the students how to operate a strategic of the design processes. To guide the students the technological innovation and the new product development. To establish an open organizational structure which could absorb the full range of innovative resources, emphasizing the design of enterprise knowledge management and intellectual property management. Furthermore, a dynamic critical thinking and open innovation ideas become very important capability today. And through the cases study help the students learning and practicing the innovation management model. The course will covers three topics: the concept of innovation management, technology & knowledge management and new product development & marketing.

**22354 展示設計 2 選**

本課程的目在於介紹一個裝飾藝術的領域，包括臨時的節日裝飾的街道，公共廣場，門面修飾，公眾假期，遊行，實物解說的裝飾和展示的設計，以及各類展覽型態等。

**22354Display and Exhibit Design 2S**

The purpose of this course is to introduce a field of the decorative arts that includes the temporary festive decoration of streets, public squares, window dressing, public holidays, parades, the design of decorations and displays for demonstrations, and various types of exhibitions.

22967 **職業安全與衛生** 2 選

介紹有關職業安全與衛生的法規概要，通盤探討一般的職業安全與衛生，再聚焦於木材設計與製造專業上的安全與衛生問題。通論內容旨在培養職場上發揮合作並有執行力的多元職能，聚焦內容在培育本系專業人才面臨新科技的時空及人員等的變革之際，應用專業知識跨領域解決新產生的安全與衛生困擾的基本能力。講授內容有職業安全與衛生法規概要，工地、工廠及危害物等屬於地點性質的安全管理，個人安全護具，機具之安全管理及維護。衛生內容除了職業

衛生概要之外，另以影響木材產業從業人員的健康管理為主點。

**Occupational safety and health** 2S

To introduce occupational safety and health, discuss the topics in general, and focus on the safety and health issues in wood design and manufacturing. The purpose of the general seminar is to cultivate a multi-functional role of cooperation and execution in the workplace. Focusing on train students develop the abilities of interdisciplinary to solve the problems of safety and health issues, base on the expertise when the technologies and personnel were changed. Lectures include outline of Occupational Safety and Health Act, safety management of workplace, factories and hazardous materials, personal protective equipment, safety management and maintenance of machines. The management of Health contents in addition to profiles, and other point is the effects wood and processing of wood on the health.

傳閱附件 3----農園生產系「智慧農業跨領域學程」中英文課程大綱

# 農園生產系「智慧農業跨領域學程」中英文課程大綱

## 農場實務

本課程提供農業生產之田間實地操作訓練，包括:果樹、蔬菜、花卉、糧食作物等之栽培與管理、土壤肥料管理、繁殖、採收、分級包裝、銷售等，使學生在實習中了解農業栽培之各種程序。

The course is designed for training of field practices of agricultural cultivation, inculding fruit crop, vegetables, flower, and food crop. Emphasis will be placed on 1.establishment and management of farm, 2.soil and soil fertility management, 3.propagation and nursery practices, 4.postharvest technology, 5. grading, packing, and 6. sales, etc..

## 生產力 4.0 概論

臺灣的農業未來是否能永續健全發展，決定於新世代農業經營者的素質創新及知識的運用之能力，經營設施農業之能力、開發農產品通路並拓展外銷之能力、精準掌握與利用新技術之能力。本課程主要整合三領域農、工、管理，透過密集式課程的授課方式，引導學生對於農業生產概論、農業設施概論、農業管理概論三個領域進行概論性的跨領域課程，學生透過本課程的修讀，對於有關智慧農業、農業生產力 4.0 之理論基礎與實務認知能更進一步。 以農業生產 4.0 概念為基礎，以深入淺出的方式解說目前臺灣農業生產概況及各農業產業之發展趨勢。其中包含了農業生產 4.0 所包含的各種技術及發展、臺灣農業百年來發展過程及趨勢及氣候變遷對於農業生產所帶來的衝擊等相關議題。此外，針對農、林、漁、牧等臺灣地區四個重要的產業，分別進行產業概況、生產加工、經營管理、污染防治及產業行銷等介紹。在每一單元最後，都會針對農業 4.0 在該項產業中的運用實例進行進一步的講解及探討。協助學生瞭解從事農業生產所需之基本知識與技能，以及與農業相關之產業特質。

As the basis of Fourth Agriculture Revolution (Agriculture 4.0) conception, in this course we use an easy way to explain the situation of agriculture producing and the trend of agriculture development in Taiwan. This contents included the different skills and development of Agriculture 4.0 about the developing process for this century, the impact of climate change with agriculture products issues and so on. According to Agriculture, Forestry, Fishery and Husbandry these four important agriculture producing industries, we will introduce the overview of Agriculture 4.0, productions and processions, agriculture industries management, pollutions preventions and agriculture industries marketing. At last for each chapters, we will share you some samples for the agriculture industry for the Agriculture 4.0. We will discuss and explain further to help students know not only the basic knowledge and abilities of agriculture production but also the industries characteristics relate to agriculture.

## 農業生產概論

廣義的農業包括農、林、漁、牧業等四大部門。自然界的生態與環境和農業的關係最密切，此乃因為農業是培育動植物的產業，其本身就是生態與環境的一環。而近年來，生態農業的生產主要是以資源的永續利用和生態環境保護為重要前提，根據生物與環境相協調適應、物種優化組合、能量物質高效率運轉、輸入輸出平衡等原理，運用系統工程方法，依靠現代科學技術和社會經濟信息的輸

入組織生產。通過食物鏈網路化、農業廢棄物資源化，充分發揮資源潛力和物種多樣性優勢，建立良性的物質循環體系，促進農業持續穩定發展，實現經濟、社會、生態的最大效益。因此，生態農業是一種知識密集型的現代農業體系，是農業發展的新型模式。因此，本課程主要授課重點如下所示。 1. 介紹台灣農業發展概況 2. 智慧與雲端農業生產科技 3. 氣候變遷對糧食作物生產的影響 4. 農業栽培概論 5. 林業造林生產與木材生產開發 6. 漁業資源概論 7. 畜牧業生產管理概論

There are four major fields of Agriculture in Taiwan, such as agriculture, forestry, fishing and animal product industry. The property of agriculture is breed animals and plants, which it is part of the ecology and the environment. In recent years, it is important that the production of agriculture is sustained to use the resources and the environment of nature. According to the principle of biological and environmental co-adaptation, optimization of species, energy functioning efficiently, energy functioning efficiency and balance of input and output, it uses the engineering system, and production is relying on modern science and socio-economic information organization. Through the food chain network and agricultural waste resources, expresses the potential of resources and species diversity, establishes of material recycling system to promote sustainable development and achieves the economic, social and ecological benefits. Ecological agriculture is a knowledge-intensive modern agricultural system. It is a new model of agricultural development. Therefore, the main focus of this course is following: 1. Introduction of Taiwan agricultural development 2. Use of agriculture production technology 3. Impact of climate change on crop production 4. Introduction of Agricultural Cultivation 5. Forestry production and timber production development 6. Introduction of fishing resources 7. Introduction of Animal Production Management.

## 農業機械

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。

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.

## 6 級農業

了解人類的連貫的生產活動，從食品和農業的開發到成熟，再到最後的餐桌。 讓學生了解就業機會以及生物技術對食物供給系統與品質和對自然環境的影響。。

Productive human activities that produce food and fiber from development to growth to the table and beyond. Students understand career opportunities, and the impact of biotechnology on food systems, texture, and natural resources..

## 無人飛行載具(UAV)原理應用

隨著新興科技的發展，無人飛行載具(UAV)結合攝影測量技術已廣泛應用於農業觀測、防災救災、及國土規劃等。本課程主要教授學生 UAV 的基本原理與應用，並以 Tello 空拍機及四軸多旋翼空拍機進行飛行模擬，學習製作拍攝影片的技術，以訓練學生成為本校 UAV 種子學生，同時培養團隊合作精神，以利未來就業能力基礎之培養。

With the development of emerging technologies, unmanned aerial vehicles (UAV) combined with photogrammetry technology have been widely used in agricultural observation, disaster prevention and relief, and land planning. This course mainly teaches students the basic principles and applications of UAV. In addition, using the Tello Air Camera and four-axis multi-rotor air-floating machine to simulate flight and learn the technology of filming. Then, train students to become UAV seed students in NPUST and cultivate teamwork spirit. In order to foster the foundation of future employability.

## 人工智慧導論與實務

本課程介紹人工智慧理論，讓學生了解人工智慧基本概念，人工智慧最新的發展方向及全世界最新應用發展現況。在此基礎上，介紹人工智慧程式語言 Python，由於其語法簡單性和多功能性，成為非程式專業背景之程式開發人員最喜歡的開發工具之一。Python 主要優點為可攜性，可以在 Linux、Windows、Mac OS 和 UNIX 等平臺上使用。可隨時隨地在任何有網路的地方，下載 python 進行程式開發；同時允許使用者建立互動式的、解釋的、模組化的、動態的、可移植的和高階的人工智慧程式碼。學習 python 程式語言，成為入門人工智慧領域最快捷之方式。

This course introduces the theory of artificial intelligence, allowing students to understand the basic concepts of artificial intelligence, the latest development of artificial intelligence and the latest developments in the world. In practice, the introduction of AI programming language - Python will be teaching in the course, due to its grammatical simplicity and versatility, has become one of the favorite tools for non-programmed background student to be a programmer. The main advantage of Python is portable, running on multiple platforms such as Linux, Windows, Mac OS, and UNIX. Also python can be downloaded anytime and anywhere for programming development that can be created in an interactive, interpreted, modular, dynamic, portable, and high-level AI codes. Learning python becomes a convenient way to get started with artificial intelligence.

## 設施園藝實習

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。

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

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。

irrigation systems.

## 農園產品處理學與實習

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。

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..

## 蔬菜學實習

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。

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, fertilizating, 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.

## 糧食作物學實習

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。

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.

## 花卉學實習

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、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。
This course offers bands on practices of techniques about flower culture and management in different production stages and systems. Topics of activities are: plug production, outdoor plants and potted plants growth and management, plant identification, floral utilization, and literature review.

## 果樹學實習

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。
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..

## 微生物學及實習(實驗)

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。
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.

## 作物病蟲害管理與診斷技術

課程目的在讓學生瞭解各種作物病原及害蟲之診斷及管理技術，其內容包括作物病蟲害種類特性、病原、害蟲為害症狀、致病機制以及管理方法，並以數種具有代表性的病蟲害，討論病原及害蟲特性、致病與為害過程、管理方法選擇、使用及效果評估等。
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.

## 大數據分析實務

本課程主要在讓國際學生對大數據有基本應用的概念，說明大數據分析應用在農業、製造業、商業行銷、線上零售業、健康照顧和金融業等不同領域，來說明大數據實際的在各產業運用，以滿足國際學生多樣化的背景。因此本課程的目的是讓學生熟悉大數據的應用和相關分析工具，落實在不同的產業面。首先介紹大數據資料的蒐集方法、應用成果、相關的技術分析的概念、資訊倫理與安全，

因大數據易面臨到道德倫理等相關議題。同時以真實的資料庫案例進行深度討論與說明大數據應用的優點及限制。第二部分為介紹幾種演算法應用在不同的實際產業，透過應用軟體 STATISTICA v13 的資料探勘模組，如：購物籃分析、決策樹、分群技術等演算法，讓同學熟悉資料探索之應用。本課程期末將要求參與的同學分組進行實務上產業之調查與分析，針對同學感興趣的個案進行大數據的個案分析，撰寫一份期末專案報告，針對個案提出幾點經營管理的建議。

This course provides Big Data concept and applications of Big Data analytics in different fields such as agriculture, manufacturing, marketing, online retailing, health care and banking. The objective of this course is to familiarize student with Big Data analysis as a tool for addressing the application in different fields. The course begins with a basic introduction to big data, as well as associated technical, conceptual and ethical challenges. Strengths and limitations of big data research are discussed in depth using real-world examples. The next part is analysis implementation of actual cases by introducing and applying special algorithms in different fields, familiar with applications of data exploration software as STATISTICA (v13) and its data miner. These specific algorithms include association rules, decision tree, clustering, and classification. Students then engage in case study exercises in which small groups of students develop and present a big data concept for a specific real-world case. Attending this course, students will have an opportunity to access to real data from different industries and know how to analysis the data with problem based learning. The goal by the end of this semester is for student to have "analytics portfolio" consisting of data analytics skill that students can use for their future career.

## 新一代網路原理與應用

課程主要探討新一代電腦網路架構、協定與應用，主要包括 IPv6 網路、4G/5G 行動網路、SDN 網路以及 All IP 網路等，實作練習將以學生分組專題，包括跨領域網路應用服務系統、農業物聯網、醫療照護、健康管理、車載資通訊、智慧家庭、智慧生活等應用服務開發練習。

New Generation Network Principles and Applications The course focuses on the next generation of computer network architecture, protocols and applications, including IPv6 network, 4G / 5G mobile network, SDN network and All IP network, the practice will be grouped in student topics, including cross-area network Road application service system, agricultural Internet of Things, medical care, health management, car information, smart home, smart life and other application services development exercises.

## 物聯網技術與實務應用

課程將教授物聯網技術與應用以及新一代網路技術，課程內容包括物聯網架構、協定與應用範例，以及新一代網路之軟體定義網路、網路功能虛擬化、4G/5G 網路、雲端與霧計算等。此課程有實驗設計，主要以 Arduino 為基礎實驗物聯網相關技術與應用。授課教材包括中文教科書、英文參考書以及自編講義。

The course will teach IoT technologies and applications as well as the next-generation network

technologies. The course covers IoT architecture, protocols and application examples. The next-generation network technology include the software-defined networking, network function virtualization, 4G/5G networking, Cloud and fog computing, teaching materials. This course has experimental design, which is mainly based on Arduino, to implement IOT-related technologies and applications.

## 機電整合與實習

本課程介紹的主題有控制器、放大器、開關，機械系統、感測器、致動器、馬達及驅動電路等機電整合系統元件。其它一般性主題包含機電整合丙級術科實習。特殊主題則有機電整合乙級術科實習。
The topics introduced in this course include the controllers, switch, mechanical elements, sensors, actuators, motor and electrical drives etc. Other topics of general interest are the skill category of Mechatronics class C. More specialized topics are skill category of Mechatronics class B.

## 感測元件原理與應用

本課程主要介紹物理及化學感測原理所製成感測器及其基本應用範例。介紹主題包括基本物理化學轉換原理、配合電路、溫度、機械量、光、聲音、流體、化學等感測器，GPS、配合資料傳輸等相關主題，及感測器在機器人與植物工廠的綜合應用。
This course introduces physics and chemistry principle for sensors and transducers. Topics include basic theory of transducers, amplification circuit, temperature sensors, mechanics sensors, photo sensors, aucostic sensors, chemical sensors, GPS, data transfer, and sensors application for robotics and plant factory.

## 可程式控制與實習

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。
The purpose of this course is to introduce the most-used programmable logic 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, Maintaing and Installing of PLC..

## 機器人的手臂控制系統與實習

本課程要旨為介紹工業用機械手臂之控制系統及實習，工業用機械手臂之控制最常用為伺服控制器，其優點為精確、功能大、及擴充性大。課程內容包括：伺服控制系統軟硬體介紹、撰寫程式、安裝及維護。
The purpose of this course is to introduce the control system of robot arm both in theory and practice for industrial applications. The advantages of servo controller are precision and easy-expand. The course

includes as follow：Hardware and software of servo control system, programming, maintaining, and operating of servo control system..

## 灌溉管理與實務

本課程主要介紹各種灌溉方法與灌溉用水管理。灌溉方法包括繼續灌溉、輪流灌溉、非常灌溉、田埂間灌溉、畦溝灌溉、噴灑灌溉、滴水灌溉、地下管路灌溉等灌溉方法。並說明各種灌溉方法之操作與用水管理方法。

The objective of this course is to introduce the irrigation methods and water management. The irrigation methods include continuous irrigation, rotational irrigation, intermittent irrigation, border irrigation, furrow irrigation, sprinkler irrigation, drip irrigation and sub-irrigation. The operation of each irrigation method and water management is also instructed in this curriculum.

## 自動駕駛電動車概論

介紹自動駕駛相關技術與基本原理，增進學生對先進技術的了解，並透過小組討論與專題研究，培養學生對相關知識的探索技巧。

Introduce the relevant technologies and basic principles of autonomous driving, enhance students' understanding of advanced technologies. Develop students' exploration skills on relevant knowledge through group discussions and case studies..

## 整車試作實務

本科目在培養學生在車輛方面上的實作能力。

This class is to establish the capabilities in design and fabrication of vehicles for students.

## 水產繁殖學實習

本課程乃介紹主要經濟水產養殖動物之種魚選擇、培育、催熟與產卵、孵化並探討種苗的培育技術。有關魚蝦類生殖生理，脂肪酸的購成與繁殖之相關性一併列入討論。。

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. Physiological responses and fatty acid composition in fish and shrimp was also discussed.

## 畜產設備智能化設計概論

設備自動化一直是農畜牧業的發展趨勢，本課程介紹的主題有：基本電學、控制器、繼電器、通訊方式、人機介面，並會有實習操作單元，讓學生了解人機介面之通訊設定與程式設計。

Mechanical automation has always been an important issue in agriculture. The topics introduced in this course include the basic electricity, controllers, relay, communications technology and human machine interface etc. Practice unit will be conducted during the course to make students understanding the skill of

communication and macro design in human machine interface.

## 實務專題

此課程培養學生基礎實務能力,藉由在學中所學理論與實作加以應用與實現。

The goal of this course is to educate thhe basiic ability of technology throughh learning theory and its applied skills.

## 校外實習

本課程提供學生在校外之實習，課程主要安排學生前往相關產業進行校外實習 4.5 個月，以了解產業實際之現況，並提昇實務經驗及強化學生專業能力。

The course is designed for the external and industrial training about 4.5 months for undergraduate student, to know the status of actual industry, furthermore, to enhance industrial and practical experience, strengthen student’s professional capability.

# 進修部四年制 土木工程系

(一)教育目標

1、培育實務與理論兼具之基層管理人才。
2、培育具人文素養之基層管理人才。
3、培育具國際觀之基層管理人才。

(二)校定共同必修科目

| 中英文科目名稱 | 學分數 | 第一學年 | | 第二學年 | | 第三學年 | | 第四學年 | | 備註 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 上 | 下 | 上 | 下 | 上 | 下 | 上 | 下 | |
| 通識選項課程<br>General Education | 12 | 2 | 2 | 2 | 2 | 2 | 2 | | | 人文學科：2 門<br>社會科學：3 門<br>數理與應用科學:1 門 |
| 國文<br>Chinese | 4 | 2 | 2 | | | | | | | 國文(閱讀與寫作)(1)<br>國文(閱讀與寫作)(2) |
| 大一英文<br>Freshman English | 4 | 2 | 2 | | | | | | | 大一英文(1)<br>大一英文(2) |
| 英語聽講練習 101~102<br>English Listening & Speaking Practice | 2 | 1 | 1 | | | | | | | 英語聽講練習 101<br>英語聽講練習 102 |
| 大一體育<br>Physical Education | 2 | 1 | 1 | | | | | | | 大一體育(1)<br>大一體育(2) |
| 外語實務<br>Foreign Language Proficiency Test | 0 | 0 | | | | | | | | 畢業前修畢<br>通過標準依「外語實務課程實施要點」規定 |
| 通識教育講座<br>Lectures on General Education | 1 | | | 1 | | | | | | 各系依序開課，開課學期不定 |
| 憲法<br>Constitution | 2 | | | | | | 2 | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 合計 | 27 | 8 | 8 | 3 | 2 | 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 | |
| 普通物理學(1)<br>General Physics (1) | 3 | | 3 | | | | | | | |
| 普通物理學實驗(1)<br>General Physics Lab. (1) | 1 | | 1 | | | | | | | |
| 微積分(1)<br>Calculus (1) | 3 | | 3 | | | | | | | |
| 普通化學(1)<br>General Chemistry (1) | 3 | | | 3 | | | | | | |
| 普通化學實驗(1)<br>General Chemistry Lab. (1) | 1 | | | 1 | | | | | | |
| 運算思維與資訊科技應用<br>Computational Thinking and Information Technology Applications | 0 | | | | 0 | | | | | |
| 工程倫理與法規<br>Ethics in Engineering | 1 | | | | | | 1 | | | |
| 實務專題<br>Special Projects | 2 | | | | | | 1 | 1 | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 合計 | 14 | 0 | 7 | 4 | 0 | 0 | 2 | 1 | 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 | |
| 基礎數學<br>Fundamental Mathematics | 2 | 2 | | | | | | | | |
| 基礎數學習作<br>Practice of Fundamental Mathematics | 1 | 1 | | | | | | | | |
| 工程材料<br>Civil Engineering Materials | 2 | 2 | | | | | | | | |
| 工程材料實習<br>Civil Engineering Materials Lab. | 1 | 1 | | | | | | | | |
| 工程測量<br>Engineering Surveying | 2 | 2 | | | | | | | | |
| 工程測量實習<br>Practice of Engineering Surveying | 1 | 1 | | | | | | | | |
| 工程力學<br>Engineering Mechanics | 2 | | 2 | | | | | | | |
| 工程數學<br>Engineering Mathematics | 2 | | | 2 | | | | | | |
| 材料力學與習作<br>Mechanics of Materials, and Practice | 3 | | | 3 | | | | | | |
| 流體力學<br>Fluid Mechanics | 2 | | | 2 | | | | | | |
| 流體力學實習<br>Practice of Fluid Mechanics | 1 | | | 1 | | | | | | |
| 結構學<br>Structural Analysis | 2 | | | | 2 | | | | | |
| 水文學與實習<br>Hydrology | 3 | | | | 3 | | | | | |
| 土壤力學(1)<br>Soil Mechanics (1) | 2 | | | | 2 | | | | | |
| 土壤力學實習<br>Soil Mechanics Lab. | 1 | | | | 1 | | | | | |
| 營建管理<br>Construction Management | 2 | | | | | 2 | | | | |

| 文科目名稱 | 學分數 | 第一學年 | | 第二學年 | | 第三學年 | | 第四學年 | | 備註 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 上 | 下 | 上 | 下 | 上 | 下 | 上 | 下 | |
| 鋼筋混凝土<br>Reinforced Concrete | 2 | | | | | 2 | | | | |
| 土壤力學(2)<br>Soil Mechanics (2) | 2 | | | | | 2 | | | | |
| 基礎工程<br>Foundation Engineering | 2 | | | | | | 2 | | | |
| 施工估價<br>Construction Cost Estimates | 2 | | | | | | 2 | | | |
| 土木施工法<br>Civil Engineering Construction | 2 | | | | | | | 2 | | |
| 水土保持法規<br>Regulations in Soil and Water Conservation | 2 | | | | | | | 2 | | |
| 土石流防治<br>Mudflows and Landslides Prevention | 2 | | | | | | | 2 | | |
| 工程契約與規範<br>Engineering Contracts and Specifications | 2 | | | | | | | | 2 | |
| 水資源工程與規劃<br>Water Resources Engineering | 2 | | | | | | | | 2 | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 合計 | 47 | 9 | 2 | 8 | 8 | 6 | 4 | 6 | 4 | |

中 (五)專業選修科目

| 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 | |
| 土木防災概論<br>Introduction to Civil Engineering Disaster | 2 | 2 | | | | | | | | |
| 電腦輔助製圖<br>Computer Aided Drafting | 2 | | 2 | | | | | | | |
| 地理資訊系統<br>Geographic Information Systems | 2 | | 2 | | | | | | | |
| 建築設計基礎<br>Architectural Design Basis | 2 | | | 2 | | | | | | |
| 工業衛生<br>Industrial Hygiene | 2 | | | 2 | | | | | | |
| 工業安全<br>Industrial Safety | 2 | | | | 2 | | | | | |
| 農田水利與實習<br>Agricultural Hydraulics | 3 | | | | | 3 | | | | |
| 地下水<br>Ground Water | 2 | | | | | 2 | | | | |
| 工程地質<br>Engineering Geology | 2 | | | | | 2 | | | | |
| 生態工程概論<br>Introduction to Ecological Engineering | 2 | | | | | 2 | | | | |
| 土壤汙染與防治<br>Soil Pollution and Reclamation | 2 | | | | | | 2 | | | |
| 風險評估<br>Risk Assessment | 2 | | | | | | 2 | | | |
| 構築案例<br>Build a Case | 2 | | | | | | 2 | | | |
| 混凝土工程實務<br>Practical Engineering of Concrete Construction | 2 | | | | | | 2 | | | |
| 地震工程概論<br>Introduction to Earthquake Engineering | 2 | | | | | | 2 | | | |
| 工業與環境毒物<br>Industrial and Environmental | 2 | | | | | | | 2 | | |

| 文科目名稱 | 學分數 | 第一學年 | | 第二學年 | | 第三學年 | | 第四學年 | | 備註 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 上 | 下 | 上 | 下 | 上 | 下 | 上 | 下 | |
| Toxicology | | | | | | | | | | |
| 崩塌地處理<br>Engineering of Landslide | 2 | | | | | | | 2 | | |
| 鋼結構工程實務<br>Practical Engineering of Steel Construction | 2 | | | | | | | 2 | | |
| 環境土壤學概論<br>Environmental Soil Science | 2 | | | | | | | | 2 | |
| 防洪工程<br>Flood Mitigation Engineering | 2 | | | | | | | | 2 | |
| 水土保持工程<br>Soil and Water Conservation Engineering | 2 | | | | | | | | 2 | |
| 水土保持工程實習<br>Soil and Water Conservation Engineering Lab. | 1 | | | | | | | | 1 | |
| | | | | | | | | | | |
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| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 合計 | 44 | 2 | 4 | 4 | 2 | 9 | 10 | 6 | 7 | |

# 土木工程系

# Department of Civil Engineering

## 一、必修科目 Required Courses

**332001 基礎數學 2 必**

本課程是銜接高中數學與微積分之先修課程，課程內容包括直線方程式、多項式、指數與對數函數、三角函數的介紹。透過符號、圖形和數值方法的學習，使學生俱備未來學習專業課程之基礎數理背景。

**332001 Fundamental Mathematics 2 R**

The course is the connecting course between mathematics of high school and calculus. The course includes: equation of straight line, polynomial, exponential function, logarithmic function, and trigonometric function. Through the learning of symbolic, graphical and numerical form, students will have the basic mathematical ability to learn the advanced professional courses.

**332002 基礎數學習作 1 必**

本課程旨在配合基礎數學講習進度，安排一系列的應用例題與習作演練，促使學生對基礎數學課程所學的原理與應用有更深刻的體驗，奠定日後繼續進修其他進階課程的基礎。

**332002 Practice of Fundamental Mathematics 1 R**

Concurrent with the course of fundamental mathematics, this course arranges a series of practical exercises for students to enhance their impression and understanding of the mathematics principles and theories. The course is to enhance the basic ability of students for learning the advanced courses.

**332003 工程材料 2 必**

本課程主要介紹土木工程材料性質，課程大綱包括：1、水化水泥種類、性質 2、骨材 3、混凝土配比設計 4、混凝土灌置及早期性質 5、混凝土微觀性質 6、影響混凝土性質因素 7、混凝土耐久性。

**332003 Civil Engineering Materials 2 R**

This course contents the following subjects: 1. Type and characteristics of hydraulic cement. 2. Aggregate. 3. Mix design of concrete. 4. Early age concrete and its placing. 5. Micro properties of concrete. 6. Factors affecting properties of concrete. 7. Durability of concrete.

**332004 工程材料實習 1 必**

土木材料試驗係一門實習之課程，其目的在訓練學生瞭解了解儀器種類、構造、試驗方法及數據分析計算原理，並具備儀器操作、試驗作業實施及成果分析能力。課程大綱: (1)水泥砂漿之流度試驗。(2)水泥砂漿之抗拉、抗壓、抗彎試驗。(3)粗、細骨材之含水量、比重試驗。(4)粗、細骨材之含水量、比重試驗。(5)骨材之單位重及空隙率試驗。(6)混凝土配合比設計。

**332004 Civil Engineering Materials Lab. 1 R**

Civil engineering materials test are providing students on-hand training of analyzing on analyzing the physical and engineering properties. The laboratory tests consist of (1) test for flow table (2) test for compressive strength of cement mortars, test for tensile strength of cement mortars, test for bending strength of cement mortars (3) test for moisture, specific gravity of fine aggregate (4) test for moisture, specific gravity of coarse aggregate (5) test for unit weight and voids in aggregate (6) mix design proportion.

**332005 工程測量 2 必**

測量為所有工程之首項工作，不論設計工程師或現場監工工程師，都需具備此種知識。測量學即提供地物與地形之量測方法、使用儀器及其表達方式。本課程可讓學生瞭解地物與地形位置之量測方法、所應使用儀器與計算過程。

**332005 Engineering Surveying 2 R**

Survey is an important and fundamental tool for engineering design and inspection. This course covers the knowledge of fundamental surveying measurements, traverse computations, coordinate geometry, mapping, CAD applications. The lectures will provide general knowledge of fundamentals surveying for engineering students.

**332006 工程測量實習 1 必**

測量為所有工程之首項工作，不論設計工程師或現場監工工程師，都需具備此種知識。測量學即提供地物與地形之量測方法、使用儀器及其表達方式。本課程可讓學生經由實際測量儀器操作瞭解地物與地形位置之量測方法、所應使用儀器與計算過程。

**332006 Practice of Engineering Surveying 1 R**

Practice of Surveying is an important and fundamental training course for engineering design and inspection. This course will provide the survey instrument operation training to the engineering students. The on-site training covers the knowledge of fundamental surveying measurements, traverse computations, coordinate geometry, mapping, CAD applications.

**332007 工程力學 3 必**

介紹力量平衡方程式與各種相關問題之解析。課程大綱：力系統觀念、等值力系統之轉換、力系統之平衡、形心及慣性矩、桁架問題之解析、樑問題之解析、吊索問題之解析、流體問題之解析、能量原理。

**332007 Engineering Mechanics 3 R**

The main contents of this course include the force equilibrium equations and various analytical problems : introduction to force system, equivalent force system transformation, equilibrium equations of force system, geometry center and moment of inertia, analysis of trusses, analysis of beams, analysis of cables, analysis of fluids, energy principles, and important sections.

**332008 工程數學 2 必**

常微分方程式：1、可分離方程式、恰當方程式、積分因子。2、線性微分方程式：一階、二階及任意階微分方程式、尤拉-柯西方程式、非齊次方程。3、系統微分方程式：特徵值、特徵向量。4、微分方程式之級數解：雷建德方程式與多項式、白塞爾方程式與函數、史特姆-劉維勒問題、正交性。5、拉卜拉氏轉換：拉氏轉換與反轉換之性質、疊積。6、線性幾何：向量、矩陣與行列式之基本運算。

**332008 Engineering Mathematics 2 R**

Ordinary differential equations: 1. separable equations, exact differential equation, integrating factors. 2. Ordinary linear differential equations: first-order, second-order, and higher order equations, Euler-Cauchy equations, homogeneous equations. 3. Systems of differential equations: eigenvalues, eigenvectors. 4. Power series solutions of differential equations: Legendre’s equations and polynomial, Bessel equations and function, Strum-Liouville problems, orthogonality. 5. Laplace transform: Laplace transform, inverse transform, properties of Laplace transform, convrlution. 6. Linear algebra: introduction to vectors, matrices and determinants.

**332009 材料力學與習作 3 必**

使學生對材料力學之基本理論有一正確的認識。課程大綱：拉力、壓力和剪力，應力與應變分析，扭矩，剪力和彎矩，樑之應力，樑之變位，靜不定樑之分析，柱，能量法。

**332009 Mechanics of Materials, and Practice 3 R**

The main contents of this course include the following problems: tension, compression and shear forces; analysis of stress and strain; torsion; shear and bending moment; stress of beams; deflection of beams; analysis of indeterminate

beams; columns; energy methods.

**332010 流體力學 2 必**

本課程主要介紹流體力學之基本原理，內容包括：1、流體基本性質 2、流體靜力學 3、系統與控制體 4、流體運動基本定律—積分型 5、理想流體運動基本定律—積分型。

**332010 Fluid Mechanics 2 R**

The course presents the basic theories of fluid mechanics. The course includes basic principles of fluid mechanics, fluid statics, system and control volume, basic laws of fluid flow.

**332011 流體力學實習 1 必**

本課程在加強學生在流體力學之運用能力，內容包括：1、流體基本性質 2、流體靜力學 3、系統與控制體 4、流體運動基本定律—積分型 5、理想流體運動基本定律—積分型。

**332011 Practice of Fluid Mechanics 1 R**

The course is to enhance the student’s application ability on the fluid mechanics. The course includes basic principles of fluid mechanics, fluid statics, system and control volume, basic laws of fluid flow.

**332012 結構學 2 必**

本課程主要介紹結構分析之基本方法。課程大綱包括：序論，結構分析之基本概念，靜定結構分析(反力，桁架軸向力，樑及構架之內力，影響線)，結構之彈性變形。

**332012 Structural Analysis 2 R**

This course presents the basic principles of structural analysis in engineering. The main contents of this course include: introduction; basic concept of structural analysis; analysis of statically determinate structures (reaction, member forces in trusses, member forces in beams and frames, influence line); elastic deflection of structures and important sections.

**332013 水文學與實習 3 必**

本課程主要授課內容包括：1、氣象因子概述 2、降水成因及降雨量資料分析 3、蒸發散量之估計 4、入滲因子、入滲分析 5、河川水流 6、逕流歷線、單位歷線 7、洪水演算 8、暴雨、洪水頻率分析。

**332013 Hydrology 3 R**

This course contents the following subjects: 1. Climatological factor introduction. 2. Types of precipitation and analysis rain. 3. Estimating

evaporation. 4. Infiltration and methods of determining infiltration. 5. Stream flow. 6. Runoff and unit hydrographic. 7. Flood routing. 8. Flood frequency probability and stochastic methods.

**332014 土壤力學(1)　　2　必**

針對土壤之生成結構，基本性質與其受外力之行為變化，加以詳細說明，並教導學生對其力學特性有初步的認識及瞭解其在工程上所扮演的角色，其主要的內容含括：土壤之生成結構、土壤之基本力學特性、土壤之分類、土壤之土礦物之組成、土壤滲流理論、土壤之有效壓力、土壤之壓密不可分、土壤之實、土壤之剪力強度與破壞理論、土壤之塑性平衡與側向土壓力等各章節。

**332014 Soil Mechanics (1)　　2　R**

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.

**332015 土壤力學實習　　1　必**

使學生經由實際操作之經驗，獲悉土壤之各項物理特性與工程性質俾使其能深切瞭解各項土壤工程鑑定分析與試驗管制，其主要內容涵括：(1)土壤含水比(2)土壤之液限與塑限試驗(3)土壤之比重(4)土壤之機械分析(5)土壤之實試驗(6)野外工地密度試驗(7)室內 CBR 試驗(8)單項度壓密試驗(9)直接剪力試驗(10)年圍壓縮試驗(單軸抗壓)(11)土壤滲透性(室內定水頭)(12)變水頭土壤滲透性試驗(13)三軸不排水式抗壓試驗(14)工程土壤試辦報告之撰寫說明。

**332015 Soil Mechanics Lab.　　1　R**

Providing Students on-hand training of analyzing on analyzing the physical and engineering properties. The laboratory tests consist of (1) moisture content, (2) liquid and plastic limits, (3) soil particle gravity, (4) sieve analysis, (5) compaction, (6) field unit weight test, (7) laboratory CBR test, (8) one dimensional consolidation test, (9) direct shear test, (10) unconfined compression test, (11) permeability test (constant head), (12) permeability (falling head), (13) triaxial UU test, (14) writing a soil test report.

**332016 營建管理　　2　必**

課程內容：1、概論 2、專案管理 3、工程的壽命週期 4、工程中的人性 5、工程管理溝通 6、工程組織 7、工程科學概念與哲理 8、工程管理的數學模式 9、基本先行圖與先行網圖之時間計算 10、重疊網狀圖 11、工程管理控

制 12、價值工程概念 13、電腦在工程管理上應用 14、財務分析與法律規章。

**332016 Construction Management 2 R**

The course is to provide common concepts of engineering management for treating the complexity and difficulty of building up constructions. The ideas of quality control, process management, value engineering, PERT and CPM, etc., will be introduced in the class.

**332017 鋼筋混凝土 2 必**

本課程主要之目標在訓練一位工程學生以基本的靜力學理論與經由實驗結果所發展之規範公式為基礎下，對於不同形態的鋼筋混凝土結構承受不同的負荷時之分析與設計能力。課程大綱：設計簡介，樑抗彎矩分析及設計，樑抗剪力分析及設計，鋼筋錨定設計，短柱分析及設計。

**332017 Reinforced Concrete 2 R**

The main objective of the course is to develop, the engineering student, the ability to analyze and design a reinforced concrete member subjected to different types of forms in a simple and logical manner using the basic principles of statics and some empirical formulas based on experimental results. It contains the following sections: introduction, analysis and design of beams under bending, analysis and design of beams under shear, development of reinforcement, analysis and design of short columns.

**332018 土壤力學(2) 2 必**

本課程將深入探討土壤力學行為與應用分析相關課題，探討課題包括土壤之剪力行為、特性、與分析、土壤之動態行為與分析、土壤地質改良技術與應用注意事項。

**332018 Soil Mechanics (2) 2 R**

This course covers the background, engineering behavior and properties, analysis, and the applications of soil shear strength. The dynamic behavior of different soils, their related problems, and methods of analysis will also be discussed. Ground improvement techniques and their related problems for different ground conditions are also the subjects for the course.

**332019 基礎工程 2 必**

本課程將講授基礎設計先前所需之地質調查主要方法及其應用，並探討淺基礎基本設計、承載力及沉陷分析，進一步亦將討論側向土壓力之理論，地工結構物之側向土壓力分析及擋土設施之穩定分析與設計。

**332019 Foundation Engineering 2 R**

This course covers the techniques for underground investigation for

foundation design and analysis. Shallow foundation design, bearing capacity and settlement analyses will also be discussed. Coulomb and Rankine theories for lateral earth pressure and stability analyses are also taught in the course.

**332020 施工估價 2 必**

施工估價係一門實務性之課程，其目的在教導學生依據工程設計圖樣及施工規範，來訓練學生對於工程用地費、工程費、規劃設計及監造費之分析技能，並且培訓學生具有施工估價之規劃設計能力。課程大綱：(1)之分析理論。(2)用地費分析及估算。(3)費之分析。(4)費之估算。(5)設計及監造費分析。

**332020 Construction Cost Estimates 2 R**

This course is designed to introduce the design and construction sketch of buildings. The material quantity assessment of a construction and project expenses estimation. The content includes the material quantity and budget estimation of engineering ground modification, main structure body and decoration works.

**332021 土木施工法 2 必**

本課程主要講授工程施工的一般概念與方法，課程內容包括：1、土木工程之特質 2、土工作業與土石開挖、搬運等 3、砌磚施工 4、混凝土施工 5、基礎施工 6、涵渠施工 7、施工管理。

**332021 Civil Engineering Construction 2 R**

The course is to provide common concepts and methods for proceeding construction. In order to let students briefly understand its application on the Civil Engineering field, the course not only introduces basic concepts of proceeding construction, but discusses some practical application illustrations with each topics such as the construction of concrete, foundation, canal, etc.

**332022 水土保持法規 2 必**

講解有關水土資源保育法規之演變，並對目前有關部門之資源保育法規加以研究探討，俾使資源保育法規能因應時代與社會之需求達到資源合理利用與保育之目的。其內容包括：有關山坡地保育條例、中華民國水土保持法草案台灣省水庫集水區治理辦法、山坡地開發建築管理辦法等及其他有關山坡利用有關之法規之探討研究。

**332022 Regulations in Soil and Water Conservation 2 R**

This course is dealing with the developing history of regulation in soil and water resources conservation, and to let the students understand a basic concept of law and regulation on the soil and water resources conservation. This course

includes as follow: the Rules of Conservation and Utilization of Slope land Resources, the Draft Law of Soil and Water Conservation of the Republic of China, the Management Law of Reservoir Watershed of Taiwan and the Management Law of Slope land Building etc.

**332023 土石流防治　　2　必**

土砂災害一直是山高水急的台灣必須面臨的問題，因此本課程首先從地形學、地質學的觀點介紹土砂災害的種類與成因；其中包含崩塌、地滑與土石流。再以流變學的觀點，探討土石流的特殊流動特性及其基本特質。隨後將探討土石流發生的機制，輔以摩爾庫倫破壞理論，探討土石流發生的臨界條件。最後簡單介紹目前台灣所採用的土石流預警系統及防治工法，讓學生瞭解土石流防治的基本理念與技術。

**332023 Mudflows and Landslides Prevention　　2　R**

Disasters caused by massive movement have always been a threat to Taiwan. Therefore, the course will start with the introduction of debris disasters from the viewpoints of geomorphology, geology, and soil science. In-depth discussion on the characteristics of debris flow as well as its flowing phenomena will be conducted during the middle third of the class period. Mohr-Column Failure theory will be used to identify the incipient motion of debris flow. At the end, the early warning system and control structures used in other countries as well as in Taiwan will conclude the entire class.

**332024 工程契約與規範　　2　必**

課程內容包含：1、約規範之概念 2、工程設計服務契約 3、工程承攬契約 4、工程承攬契約之必要文件 5、工程投標規定、一定投標附件規定 6、工程決標與工程實施 7、契約監督執行與變更、契約條款解釋與仲裁。

**332024 Engineering Contracts and Specifications　2　R**

The theme of the course is to introduce the contracts and specifications to be an engineer how to get insight into the engineering work under contracts and specifications with an aim to avoiding the disputant and execute your agreement and requirement to complete the construction.

**332025 水資源工程與規劃　　2　必**

本課程主要將水資源工程作概括性介紹，授課內容包括：定量水文學概述、灌溉工程、水庫、給水系統、壩工、排水工程、排洪道、出水工、汙水及廢水處理、壓力管路、洪災消滅。

**332025 Water Resources Engineering　　2　R**

This course contents the following subjects: Quantitative hydrology

introduction; Reservoirs; Dams; Spillways gates and outlet works; Pressure conduits; Irrigation system; Water supply systems; Drainage system; Sewerage and wastewater treatment; Flood-damage mitigation.

## 二、選修科目 Elective Courses

**332026 土木防災概論　　2　選**

本課程主要介紹土木工程可能遭遇之工程與天然災害，並說明預防之道。課程內容包括洪旱災害，坡地災害，地震災害與工程災害。

**332026 Introduction to Civil Engineering Disaster　　2　S**

The course presents the disaster types of civil engineering and prevention methods. The course includes flood and drought disaster, slope disaster, earthquake disaster and engineering calamity.

**332027 電腦輔助製圖　　2　選**

本課程主要介紹電腦繪圖之基本概念，並配合 Auto CAD 電腦輔助繪圖軟體、教授基本繪圖指令、繪圖編修指令、標準底圖之建立與設定、尺寸之標註、圖層之觀念、聚合模組與屬性、圖形之輸出、使用者介面控制、Auto CAD 概念簡介。

**332027 Computer Aided Drafting　　2　S**

The objective of this course is introduce the basic concept of computer aided drawing and to practice with Auto CAD software package. Through the class, the student will familiar with (1) Drawing command, (2) Edit command, (3) Standard configuration setup, (4) Dimensioning, (5) Concept of layer, (6) Block and attribute, (7) Output device, (8) User define menu, (9) AutoLISP concept.

**332028 地理資訊系統　　2　選**

地理資訊系統宜於以地圖解決問題。探討內容包含資料庫、軟體與硬體。本課程不限於商用套裝軟體，學生需要完成地理資訊系統設計工作，中文功能為最基本要求。探討案例涵蓋多種方面，水庫壩址選定與規劃為詳細討論重點，人造衛星定位系統與地理資訊系統整合亦為探討內容。

**332028 Geographic Information Systems　　2　S**

Geographic Information System is very useful to solve problems in the context of maps. It consists of database, software, and hardware. This course does not confine itself any single commercial GIS package. A term project is recommended to design a personal GIS by student himself. Case studies were covered in different fields. Dame site selection and planning is discussed in detail to examine what can be done when a GIS is implemented. Global positioning system (GPS)and GIS integration is also discussed in detail.

**332029 建築設計基礎　　2　選**

本課程之目的在於透過空間設計之實際操作及案例分析，練習建築空間的語彙操作，希望能創造出空間品質及環境友善並俱的建築設計。並建立對造型、空間組成及環境友善的基本認識。

**332029 Architectural Design Basis　　2　S**

The purpose of this course is to practice the vocabulary operation of the building

space through the practical operation and case analysis of the space design, hoping to create a space quality and environmentally friendly architectural design. And establish a basic understanding of the shape, space composition and environmental friendliness.

**332030 工業衛生 2 選**

本課程啟發學生對於職業安全衛生領域之興趣，並介紹職業安全衛生之歷史緣由、職業災害、法令依據及相關防範措施等職業安全衛生相關之知識及技能，以期許學生能具有熱情及從事職業安全衛生工作與研究。

**332030 Industrial Hygiene 2 S**

Induce the students to have interest in occupational safety and hygiene. Introduce occupational safety and hygiene historical statement, occupational accidents, decrees and skills of occupational safety and hygiene. In the future, the students could have passion and interest in occupational safety, hygiene and research.

**332031 工業安全 2 選**

國內工安意外災害頻傳，如何落實工業安全，需有健全的安全管理制度為基礎。本課程為基礎工業安全管理課程，主要介紹在工業安全管理的基本理論及相關法令，課程內容包括(1)職業安全衛生法令(2)承攬管理(3)化學品全球調和系統(4)風險評估管理(5)健康職場(6)職業災害能量及類型(7)個人防護具(8)專題報告，希冀修習者對未來職場安全管理體系的運作，有一概括性的瞭解。

**332031 Industrial Safety 2 S**

The domestic labor accidental is high frequency. How to implement industrial safety management, the end depends on the perfect management system is the foundation, and auxiliary take the effective engineering improvement as the method. This course is mainly introducing the basic theory of industrial safety management and related Occupational safety and health laws. Curriculum content including (1) Occupational safety and health rule (2) Contractor management (3) Globally harmonized system of classification and labelling of chemicals (4) Risk assessment (5) Healthy workplace and promotion (6) Accidents of source and type (7) Personal protective equipment (8) Case study and report.

**332032 農田水利與實習 3 選**

本課程在介紹農場內有關灌溉與排水原理、方法及其有關 構造物，其內容包括：1、作物-土壤-水份三者之關係 2、灌溉用水量與灌溉時期 3、灌溉排水計劃 4、灌溉水源 5、攔河堰及渠首工 6、配水方法 7、灌溉技術 8、抽水站 9、蓄水庫 10、輸水構造物 11、控制及保護構造物 12、量水構造物 13、排水方法。

**332032 Agricultural Hydraulics 3 S**

This course introduces the method of irrigation and drainage according to farm management, and the applied structures, and the contents are listed as follows: 1. Basic Crop-soil-water relations. 2. When to irrigation and how much water to apply. 3. Plan of irrigation and drainage. 4. Source of Irrigation water. 5. Diversion dam and Head work. 6. Distribution of irrigation. 7. Technique of irrigation. 8. Pump station. 9.

Reservoir. 10. Conveyance Structures. 11. Control and protective structures. 12. Measuring structures. 13. Method of drainage.

**332033 地下水　　2　選**

地下水為水資源利用之另一替代水源，本課程主要介紹有關地下水之基本性質及抽水試驗之分析方法與相關鑿井技術。授課內容有：地下水與水文循環，水井之鑿設與保養，含水層之物理性質，海水入侵，化學性質與原理，地盤下陷，地下水流況，地下水經濟分析，抽水試驗分析。

**332033 Ground Water　　2　S**

Groundwater is more than a resource. It is an important feature of the natural environment；it leads to environmental problems, and may in some cases offer a medium for environmental solutions. It is part of the hydrologic cycle，and an understanding of its role in this cycle is mandatory if integrated analyses are to be promoted in the context，groundwater contributes to such geotechnical problem as slope stability and land subsidence. Groundwater is also a key to understanding a wide variety of geological processes，among them the generation of earthquakes, the migration and accumulation of petroleum.

**332034 工程地質　　2　選**

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：（1）台灣之地形發育與特色（2）台灣之地層（3）地質構造（4）活動漸層（5）地層圖製作與研讀（6）岩石類則與其工程特性（7）不連續面種類與特性（8）砂石骨材及其特性（9）水庫工程地質（10）坡地社區工程地質（11）道路工程地質（12）橋隧工程地質（13）山崩與邊坡穩定分析（14）台灣較大規模之山崩個案介紹與分析。

**332034 Engineering Geology　　2　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, engineering geology for slope land developing, engineering geology for road construction, engineering geology for tunnels and bridges, slope instability analysis, practical cases of rock fall and slope failure in Taiwan.

**332035 生態工程概論　　2　選**

生態工程係整合人類社會與其自然環境，基於兩者之利益，而發展的永續生態系統設計。生態工程包含創造和修復對人類和自然都有益的永續生態系統；生態工程亦結合重建、設計和建造水陸生態系統等基礎的和應用的科學。

**332035 Introduction to Ecological Engineering　　2　S**

Ecological engineering is “the design of sustainable ecosystems that integrate

human society with its natural environment for the benefit of both". Ecological engineering involves creating and restoring sustainable ecosystems that have value to both humans and nature. Ecological engineering combines basic and applied science for the restoration, design, and construction of aquatic and terrestrial ecosystems.

**332036 土壤汙染與防治 2 選**

本課程在使學生瞭解本省土壤受污染之情形及各種可能之污染物與污染源，各種污染物之特質及其在土壤中之累積、分解與移動情形，土壤遭受污染後對其物理、化學及生物性質之影響及污染土壤在利用上所產生之問題。此外，並介紹學生各種污染土壤之改善方法，使學生得以瞭解土壤污染所衍生之問題及可行之對策。

**332036 Soil Pollution and Reclamation 2 S**

This course will give students the knowledge of soil pollution, including the properties of different pollutants, the sources of each pollutant, the accumulation, the decomposition, and the movement of pollutants in soils, the changes of soil properties caused by pollution, and the problems caused by utilization of polluted soils. In addition, the reclamation methods of polluted soil will also be introduced.

**332037 風險評估 2 選**

本課程建立學生對風險辨識、評估及控制之概念，藉由辨識出的危害因子，套用定性及定性之方式來量化其風險值，最後判定其量化風險值是否能被接受或需改善。將此風險評估之技能運用在職業災害之預防，以達成減災之目標。

**332037 Risk Assessment 2 S**

Introduce risk identification, risk assessment and risk control to the students. Hazards identified by factors of safety and hygiene, and then using the qualitative and qualitative methods to quantify the values of risk. Finally, determines the consequence of risk to be accepted or not. Risk management could be avoided in the occupational accidents.

**332038 構築案例 2 選**

介紹建築構築之實際案例，從小住宅到普立茲克建築獎得獎建築師的大型公共建築。分析建築設計概念之發想及轉化，建立從抽象概念轉化為實際空間的概念。 並以實際繪圖的方式建立圖面呈現的基本概念。

**332038 Build a Case 2 S**

Introduce the actual case of building construction, from the villa to the large public building of the Pritzker Architecture Prize winning architect. Analyze the concept and transformation of architectural design concepts and establish the concept of transforming from abstract concepts to real space. And establish the basic concept of drawing in the form of actual drawing.

**332039 混凝土工程實務 2 選**

介紹混凝土工程的施作過程，使學生了解工程師在混凝土工程實務中所扮演

的角色，以及所需檢核的重點項目；再以實際工程案例說明整個建造過程，協助學生能儘早融入工程實務環境。

**332039 Practical Engineering of Concrete Construction 2 S**

This course introduces the practical construction process of concrete engineering and demonstrates with real cases. Students could understand the role of civil engineers in the construction of concrete engineering and the key points during the construction period.

**332040 地震工程概論 2 選**

期使學生瞭解地震工程學涵蓋之領域，並簡介地球物理學、地質學、地震學、振動學、材力、土壤力學、結構動力學、施工技術以及彈性波動學各領域之基本知識，讓學生領悟如何將各學門知識領域應用於地震工程之設計與施工。

**332040 Introduction to Earthquake Engineering 2 S**

Use of soil mechanics principles in the analysis, design, and construction of earth structures. Principles of compaction and compaction control; an introduction to slope stability analysis and landslides; earth reinforcement systems, and ground improvement techniques.

**332041 工業與環境毒物 2 選**

本課程啟發學生對於毒性化學物質的基本認知，藉由瞭解毒化物對身體傷害的曝露及生物機轉來瞭解毒化物管理的必要性，並藉由定期的健康檢查來量測及追踪健康狀況，採取相對應之管理措施，來減少疾病的發生及嚴重性，並由法規面來瞭解管理機制及如何運用相關知識來進行本質安全的工業安全管理。

**332041 Industrial and Environmental Toxicology 2 S**

Induce the students to have interest and common sense in toxic chemicals substances. Understanding exposure, biological machine and managements of toxic chemicals substances in the work place. How to protect labors to avoid exposure with toxic chemicals substances and develop emergency response system in this class is critical issue.

**332042 崩塌地處理 2 選**

本課程之內容：1、緒論與意義 2、崩坍地之分類與型態 3、崩坍地之理論分析 4、崩坍地之判斷 5、崩坍地之調查與分析 6、崩坍地之安定分析 7、崩坍地之處理。

**332042 Engineering of Landslide 2 S**

The contents of this course included are: (1) Introduction and Definition of Landslide, (2) Classification and Type of Landslide, (3) Theoretical Analysis of Landslide, (4) Judgement of Landslide, (5) Surveying and Analysis of Landslide, (6) Stability Analysis of Landslide, (7) Treatment of Landslide.

**332043 鋼結構工程實務 2 選**

介紹鋼結構工程的施作過程，使學生了解工程師在鋼結構工程實務中所扮演

的角色，以及所需檢核的重點項目；再以實際工程案例說明整個建造過程，協助學生能儘早融入工程實務環境。

**332043 Practical Engineering of Steel Construction 2 S**

This course introduces the practical construction process of steel engineering and demonstrates with real cases. Students could understand the role of civil engineers in the construction of steel engineering and the key points during the construction period.

**332044 環境土壤學概論 2 選**

本課程旨在介紹土壤基本之物理、化學及生物性質，其教授之內容包括土壤之重要性、土壤之來源、土壤無機礦物、土壤有機質、土壤水份、土壤空氣、土壤粒子表面性質、土壤酸鹼性、及土壤肥力(氮、磷、鉀、鈣、鎂、硫)等，使學生奠定土壤之基本知識，俾能進一步探討土壤污染之相關課題。

**332044 Environmental Soil Science 2 S**

This course introduces students the physical, chemical, and biological properties of soils. The subjects include the importance of soils, the origin of soils, mineral particles, organic materials, water in soils, air in soils, particle surfaces, soil acidity and alkalinity, soil fertility(N, P, K, Ca, Mg, S) etc. The students may be familiar with basic properties of soils as a tool for further study of soil pollution.

**332045 防洪工程 2 選**

洪水致災受自然與人為因素影響，因此思維與工程必須整合應用，故規劃防洪工程課程內容，包括：治水防洪概述、地面水流、結構物對水流之影響、地面水流計算、防洪淹水工程措施。

**332045 Flood Mitigation Engineering 2 S**

Flood disaster is influenced by the factor of nature and human. So the thinking and Engineering have to make together. Therefore, the content of flood mitigation engineering course will be include introduction of water control and flood mitigation, runoff, effects of structures on flow, runoff computation and flood control projects.

**332046 水土保持工程 2 選**

本課程講解水土保持工程法規劃、設計與施工之原理與方法，主要內容包括：坡地排水、蝕溝控制、邊坡穩定等實用技術之應用。

**332046 Soil and Water Conservation Engineering 2 S**

The principle and methodology of planning, design, and construction of soil and water conservation structures are discussed in this course. The subjects include: slope land drainage, gully control, and slope stabilization.

**332047 水土保持工程實習 1 選**

本實習課程著重於水土保持工程法規劃、設計、施工之實務練習。內容包括各單項工程之設計與施工管理（防砂壩、坡地排水溝、擋土牆等），及系統之規劃與分析。

**332047 Soil and Water Conservation Engineering Lab. 1 S**

The subject of this laboratory study is to practice of individual soil and water conservation structure design and construction management. The subjects of the practice include: Check dam, slope land drainage, and slope stabilization.

# 土木工程系 大學部(進修教育) 課程與核心能力關聯表

| 【專業必修】 | | | | | | | |
|---|---|---|---|---|---|---|---|
| 核心能力項目 / 科目名稱 | 具有運用數學與工程知識以及定義問題之能力 | 具有土木工程設計之基本能力 | 具有執行實驗與數據整理之能力 | 具有執行工程實務之技術能力 | 具有口頭及書面報告的溝通技巧、專案管理(含經費規劃)、領域整合與團隊合作的能力 | 具有理解專業倫理、人文及法律與社會責任感之認知 | 具有工程專業之國際觀 |
| 基礎數學 | V | V | V | V | V | | |
| 基礎數學習作 | | V | V | V | V | | |
| 工程材料 | V | | V | V | V | | |
| 工程材料實習 | V | | V | V | V | | |
| 工程測量 | V | | V | V | V | | |
| 工程測量實習 | V | | V | V | V | | |
| 工程力學 | V | V | V | V | | | |
| 工程數學 | V | | V | | V | | V |
| 材料力學與習作 | V | V | | V | V | V | V |
| 流體力學 | V | | V | | | V | V |
| 流體力學實習 | V | | V | | | V | V |
| 結構學 | V | V | V | | | V | |
| 水文學與實習 | V | V | V | V | V | | |
| 土壤力學(1) | V | | V | | | V | |
| 土壤力學實習 | V | | V | | | V | |
| 營建管理 | V | V | | V | V | V | V |
| 鋼筋混凝土 | V | V | | V | V | V | |
| 土壤力學(2) | V | V | V | V | | V | |
| 基礎工程 | V | V | | V | | | |
| 施工估價 | V | | V | V | V | V | |
| 土木施工法 | V | V | V | V | V | V | V |
| 水土保持法規 | V | V | V | V | V | V | |
| 土石流防治 | V | V | V | V | V | V | V |
| 工程契約與規範 | V | | V | | V | V | V |
| 水資源工程與規劃 | V | V | V | V | V | | |

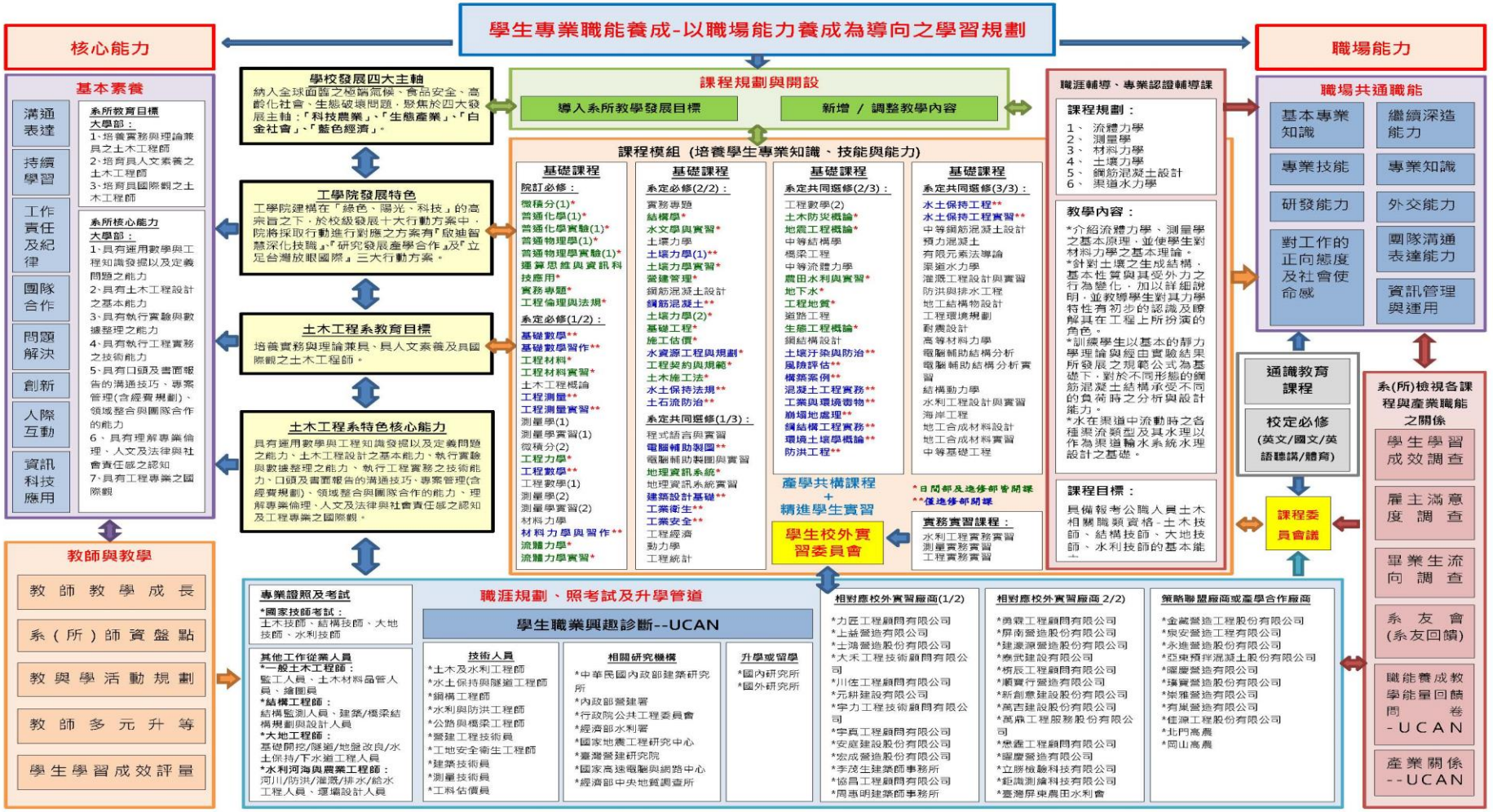
# 土木工程系 大學部(進修教育) 課程與核心能力關聯表

| 【專業選修】 | | | | | | | |
|---|---|---|---|---|---|---|---|
| 核心能力項目 / 科目名稱 | 具有運用數學與工程知識發掘以及定義問題之能力 | 具有土木工程設計之基本能力 | 具有執行實驗與數據整理之能力 | 具有執行工程實務之技術能力 | 具有口頭及書面報告的溝通技巧、專案管理(含經費規劃)、領域整合與團隊合作的能力 | 具有理解專業倫理、人文及法律與社會責任感之認知 | 具有工程專業之國際觀 |
| 土木防災概論 | V | V | V | V | V | V | V |
| 電腦輔助製圖 | | | V | V | | | |
| 地理資訊系統 | V | V | V | V | V | | V |
| 建築設計基礎 | V | V | V | V | V | V | V |
| 工業衛生 | V | V | | V | | V | V |
| 工業安全 | V | V | V | V | | V | V |
| 農田水利與實習 | V | V | | V | V | | |
| 地下水 | V | V | V | V | | | |
| 工程地質 | | V | V | V | | | |
| 生態工程概論 | V | V | V | V | V | V | V |
| 土壤汙染與防治 | V | V | V | V | | V | V |
| 風險評估 | V | | V | V | | V | |
| 構築案例 | V | V | V | V | V | V | V |
| 混凝土工程實務 | V | V | | V | | V | V |
| 地震工程概論 | V | V | V | V | V | V | V |
| 工業與環境毒物 | V | V | V | V | | V | V |
| 崩塌地處理 | V | V | V | V | V | V | V |
| 鋼結構工程實務 | V | V | | V | | V | V |
| 環境土壤學概論 | V | | V | V | | V | V |
| 防洪工程 | V | V | V | V | V | V | V |
| 水土保持工程 | V | V | V | V | V | V | V |
| 水土保持工程實習 | V | V | V | V | V | V | V |

# 土木工程系 大學部(進修教育) 課程與核心能力之關聯檢核表

| 核心能力 | 能力指標與核心素養 | 對應課程 | 檢核機制 |
|---|---|---|---|
| 1、具有運用數學與工程知識發掘以及定義問題之能力。 | 1、具有土木工程專業知識。<br>2、具有應用數學與力學知識。<br>3、協調整合能力。<br>4、獨立思考能力。<br>5、問題解決能力。 | 基礎數學、工程材料、工程材料實習、工程測量、工程測量實習、工程力學、工程數學、材料力學與習作、流體力學、流體力學實習、結構學、水文學與實習、土壤力學(1)、土壤力學實習、營建管理、鋼筋混凝土、土壤力學(2)、基礎工程、施工估價、土木施工法、水土保持法規、土石流防治、工程契約與規範、水資源工程與規劃、土木防災概論、地理資訊系統、建築設計基礎、工業衛生、工業安全、農田水利與實習、地下水、生態工程概論、土壤汙染與防治、風險評估、構築案例、混凝土工程實務、地震工程概論、工業與環境毒物、崩塌地處理、鋼結構工程實務、環境土壤學概論、防洪工程、水土保持工程、水土保持工程實習。 | 1、修畢校定基礎課程 14 學分、通識教育講座 1 學分及通識課程 12 學分。<br>2、修畢院、系專業必修課程 61 學分及專業選修課程 40 學分。<br>3、畢業需修讀 128 學分。<br>4、外語檢定合格 (依據本校外語實務課程實施要點規定)。<br>5、各項專業科目之考核依據學科測驗、報告、操作、作業、分組討論及學習態度為檢核機制。 |
| 2、具有土木工程設計之基本能力。 | 1、具有土木工程設計與施工之基本職能。<br>2、紮實土木工程基礎。 | 基礎數學、基礎數學習作、工程力學、材料力學與習作、結構學、水文學與實習、營建管理、鋼筋混凝土、土壤力學(2)、基礎工程、土木施工法、水土保持法規、土石流防治、水資源工程與規劃、土木防災概論、地理資訊系統、建築設計基礎、工業衛生、工業安全、農田水利與實習、地下水、工程地質、生態工程概論、土壤汙染與防治、構築案例、混凝土工程實務、地震工程概論、工業與環境毒物、崩塌地處理、鋼結構工程實務、防洪工程、水土保持工程、水土保持工程實習。 | |
| 3、具有執行實驗與數據整理之能力。 | 1、協調整合能力。<br>2、獨立思考能力。<br>3、問題解決能力。<br>4、團隊與組織的管理與領導。<br>5、敬業合群。 | 基礎數學、基礎數學習作、工程材料、工程材料實習、工程測量、工程測量實習、工程力學、工程數學、流體力學、流體力學實習、結構學、水文學與實習、土壤力學(1)、土壤力學實習、土壤力學(2)、施工估價、土木施工法、水土保持法規、土石流防治、工程契約與規範、水資源工程與規劃、土木防災概論、電腦輔助製圖、地理資訊系統、建築設計基礎、工業安全、地下水、工程地質、生態工程概論、土壤汙染與防治、風險評估、構築案例、地震工程概論、工業與環境毒物、崩塌地處理、環境土壤學概論、防洪工程、水土保持工程、水土保持工程實習。 | |

| 核心能力 | 能力指標與核心素養 | 對應課程 | 檢核機制 |
|---|---|---|---|
| 4、具有執行工程實務之技術能力。 | 1、具備工作熱忱。<br>2、具備工程倫理理念。<br>3、協調整合能力。<br>4、獨立思考能力。<br>5、問題解決能力<br>6、團隊與組織的管理與領導。<br>7、敬業合群。 | 基礎數學、基礎數學習作、工程材料、工程材料實習、工程測量、工程測量實習、工程力學、材料力學與習作、水文學與實習、營建管理、鋼筋混凝土、土壤力學(2)、基礎工程、施工估價、土木施工法、水土保持法規、土石流防治、水資源工程與規劃、土木防災概論、電腦輔助製圖、地理資訊系統、建築設計基礎、工業衛生、工業安全、農田水利與實習、地下水、工程地質、生態工程概論、土壤汙染與防治、風險評估、構築案例、混凝土工程實務、地震工程概論、工業與環境毒物、崩塌地處理、鋼結構工程實務、環境土壤學概論、防洪工程、水土保持工程、水土保持工程實習。 | |
| 5、具有口頭及書面報告的溝通技巧、專案管理(含經費規劃)、領域整合與團隊合作的能力。 | 1、協調整合能力。<br>2、獨立思考能力。<br>3、問題解決能力。<br>4、團隊與組織的管理與領導。<br>5、敬業合群。<br>6、口頭與文字報告。 | 基礎數學、基礎數學習作、工程材料、工程材料實習、工程測量、工程測量實習、工程數學、材料力學與習作、水文學與實習、營建管理、鋼筋混凝土、施工估價、土木施工法、水土保持法規、土石流防治、工程契約與規範、水資源工程與規劃、土木防災概論、地理資訊系統、建築設計基礎、農田水利與實習、生態工程概論、構築案例、地震工程概論、崩塌地處理、防洪工程、水土保持工程、水土保持工程實習。 | |
| 6、具有理解專業倫理、人文及法律與社會責任感之認知。 | 1、具備工作熱忱。<br>2、具備工程倫理理念。<br>3、協調整合能力。<br>4、獨立思考能力。 | 土木防災概論、材料力學與習作、流體力學、流體力學實習、結構學、土壤力學(1)、土壤力學實習、營建管理、鋼筋混凝土、土壤力學(2)、施工估價、土木施工法、水土保持法規、土石流防治、工程契約與規範、建築設計基礎、工業衛生、工業安全、生態工程概論、土壤汙染與防治、風險評估、構築案例、混凝土工程實務、地震工程概論、工業與環境毒物、崩塌地處理、鋼結構工程實務、環境土壤學概論、防洪工程、水土保持工程、水土保持工程實習。 | |
| 7、具有工程專業之國際觀。 | 1、了解土木工程國際議題。<br>2、外語聽說讀寫。<br>3、多元文化體認。 | 工程數學、材料力學與習作、流體力學、流體力學實習、營建管理、土木施工法、土石流防治、工程契約與規範、土木防災概論、地理資訊系統、建築設計基礎、工業衛生、工業安全、生態工程概論、土壤汙染與防治、構築案例、混凝土工程實務、地震工程概論、工業與環境毒物、崩塌地處理、鋼結構工程實務、環境土壤學概論、防洪工程、水土保持工程、水土保持工程實習。 | |




土木工程系-大學部(含進修部) 特色核心指標、教育目標、核心能力、課程地圖及就業地圖(職涯進路)彙整圖)

傳閱附件 5----機械工程系 108 學年度(追認)及 109 學年度「產學攜手專班系科本位課程規劃」案

# 13.四年制 機械工程系 產學攜手合作專班 (108 及 109 學年度入學適用)

## (一)教育目標

1.應用機械專業知識，解決精密機械與綠能工程問題之能力。
2.具工作熱忱、社會責任感與守法之人文素養。
3.培養國際觀、終身學習與團隊合作之能力。

## (二)校定共同必修科目

| 中文科目名稱<br>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<br>General Education | 12 | 2 | 2 | 2 | 2 | 2 | 2 | | | 通識課程中法學緒論、行政法、法律與生活及勞工法規四者至少需選修一門。<br>通識選項課程：<br>人文學科：2 門<br>社會科學：3 門<br>自然與生命科學：1 門 |
| 國文<br>Chinese | 4 | 2 | 2 | | | | | | | 國文(閱讀與寫作)(1)<br>國文(閱讀與寫作)(2) |
| 大一英文<br>Freshman English | 4 | 2 | 2 | | | | | | | 大一英文(1)<br>大一英文(2) |
| 英語聽講練習 101~102<br>English Listening & Speaking Practice | 2 | | | 1 | 1 | | | | | 英語聽講練習 101<br>英語聽講練習 102 |
| 憲法<br>Constitution | 2 | | | | | | | 2 | | |
| 體育<br>Physical Education | 2 | 1 | 1 | | | | | | | 一年級：<br>大一體育(1)、<br>大一體育(2) |
| 通識教育講座<br>Lectures on General Education | 1 | | | | | | | | 1 | 各系依序開課，開課學期不定 |
| 外語實務<br>Foreign Language Proficiency Test | 0 | | | 0 | | | | | | 畢業前修畢<br>通過標準依「外語實務課程實施要點」規定 |
| | | | | | | | | | | |
| 合計 | 27 | 7 | 7 | 3 | 3 | 2 | 2 | 2 | 1 | |

（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 | |
| 工程倫理與法規<br>Ethics and Law in Engineering | 1 | | | | | | 1 | | | |
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| 合計 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | |

(四)專業必修科目

| 中文科目名稱<br>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 | |
| 產業實務實習(1)<br>Professional practice(1) | 4 | 4 | | | | | | | | 為週一到週四在配合廠商處進行實習 |
| 普通物理學(1)<br>General Physics (1) | 3 | 3 | | | | | | | | |
| 普通物理學實驗(1)<br>General Physics Lab. (1) | 1 | 1 | | | | | | | | |
| 能源概論<br>Introduction to Energy | 3 | 3 | | | | | | | | |
| 產業實務實習(2)<br>Professional practice(2) | 4 | | 4 | | | | | | | 為週一到週四在配合廠商處進行實習 |
| 基礎數學<br>Fundamental mathematics | 3 | | 3 | | | | | | | |
| 熱學工程概論<br>Introduction of Thermal Engineering | 3 | | 3 | | | | | | | |
| 工程圖學實習<br>Engineering Graphics Practice | 1 | | 1 | | | | | | | |
| 產業實務實習(3)<br>Professional practice(3) | 4 | | | 4 | | | | | | 為週一到週四在配合廠商處進行實習 |
| 靜力學<br>Statics | 3 | | | 3 | | | | | | |
| 電腦輔助機械製圖<br>Computer-Aided Mechanical Drawing | 3 | | | 3 | | | | | | |
| 工廠實習<br>Practical Training in Factory | 2 | | | 2 | | | | | | |
| 產業實務實習(4)<br>Professional practice(4) | 4 | | | | 4 | | | | | 為週一到週四在配合廠商處進行實習 |
| 材料力學<br>Mechanics of Materials | 3 | | | | 3 | | | | | |
| 材料實驗<br>Fundamental Experiments in Materials | 1 | | | | 1 | | | | | |
| 機械製造<br>Manufacturing Processes and Systems | 3 | | | | 3 | | | | | |
| 工程材料<br>Materials of Engineering | 3 | | | | 3 | | | | | |
| 產業實務實習(5)<br>Professional practice(5) | 4 | | | | | 4 | | | | 為週一到週四在配合廠商處進行實習 |

| 中文科目名稱<br>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 | |
| 電腦輔助機械設計與實習<br>Elements of Mechanism and Practice | 3 | | | | | 3 | | | | |
| 應用電子學與實習<br>Application Electronics and Practice | 3 | | | | | 3 | | | | |
| 精密量測與實習<br>Precision Measurement and Practice | 3 | | | | | 3 | | | | |
| 產業實務實習(6)<br>Professional practice(6) | 4 | | | | | | 4 | | | 為週一到週四在配合廠商處進行實習 |
| 電腦數值控制工具機與實習<br>Computer Numerically Controlled Machine Tools and Practice | 3 | | | | | | 3 | | | |
| 自動化工程<br>Automatic Engineering | 3 | | | | | | 3 | | | |
| 程式設計與實習<br>Program language and practice | 3 | | | | | | 3 | | | |
| 產業實務實習(7)<br>Professional practice(7) | 4 | | | | | | | 4 | | 為週一到週四在配合廠商處進行實習 |
| 自動控制與實習<br>Automatic Control and Lab | 3 | | | | | | | 3 | | |
| 可程式控制與實習<br>Programmable Controller and Practice | 3 | | | | | | | 3 | | |
| 進階電腦數值控制工具機<br>Advanced computer numerical controlled machine tools | 3 | | | | | | | 3 | | |
| 產業實務實習(8)<br>Professional practice(8) | 4 | | | | | | | | 4 | 為週一到週四在配合廠商處進行實習 |
| 機電系統整合與實習<br>Mechatronics and lab | 3 | | | | | | | | 3 | |
| 多軸複合加工<br>CNC Turning and Milling Comples Machines internships | 3 | | | | | | | | 3 | |
| 工廠管理<br>Factory Management | 3 | | | | | | | | 3 | |
| 合計 | 100 | 11 | 11 | 12 | 14 | 13 | 13 | 13 | 13 | |

# 機械工程系(產學攜手合作專班) (108 及 109 學年度入學適用)

# Department of Mechanical Engineering

## 一、必修科目 Required Courses

**22746~22753 產業實務實習(1)~(8)　　4,必**

落實學生學以致用，並加強縮短四技學程的學生學用落差，而進行培育相關實務工作經驗之一系列實習課程。

**22746~22753 Professional practice(1)~(8)　　4,R**

Through this course, students can apply their knowledge to implement and cultivate a series of relevant practical work experience in this internship programs.

**05022 普通物理(1)　3,必**

一、力學：

1.等加速運動 2.牛頓運動定律 3.靜平衡 4.功與能 5.線動量 6.轉動運動 7.轉動功與能。

二、熱力學：

1.第零定律 2.熱與功 3.第一定律 4.第二定律。

**05022 General Physics (1)　3,R**

1.Mechanics：

(1).Uniformly Accelerated Motion (2).Newton's Laws of Motion
(3).Static Equilibrium (4).Work and Energy
(5).Linear Momentum (6).Motion in A Circle
(7).Rotational Work Energy and Momentum

2.Thermodynamics：

(1).The Zeroth Law of Thermodynamics
(2).Temperature and The Kinetic of Gases
(3).The First Law of Thermodynamics
(4).The Second Law of Thermodynamics

**05023 普通物理實驗(1)　1,必**

1.基本量測　2.自由落體
3.單擺　4.摩擦係數
5.力的分解　6.碰撞
7.表面張力　8.固體比熱
9.液體比熱　10. 線膨脹

**05023 普通物理學實驗(1)　1,R**

General Physics Lab. (1)

1. Fundamental measurement
2. Free falling body
3. Single pendulum
4. Friction
5. Components of force
6. Collision
7. Surface tension
8. Specific heat of solid
9. Specific heat of liquid

10. Linear expansion

**22396 能源概論 3,必**

人類的永續發展之重大因素之一便是能源，包括：化石燃料、核能及再生能源。但是，因為地球資源貯存量有限，如果沒有適當的能源節制及恰當的再生能源技術，進而有效的能源管理政策，不但有害於經濟的發展，也會造成能源缺乏，引起全球人類與社會衰退。
提升能源環保技術及管理的基本步驟是奠定具有整體觀的能源環保之教育，具有科技、管理、經濟整體觀，因此本課程之內容涵蓋了過去、現在及未來的能源技術、能源種類、能源經濟及管理問題、等等。本課程探討各議題加以說明，並指出未來的可能展望。對我國的能源現況加以分析，也探討近代能源之環保議題，因此應用範圍極廣。本課程主要的內容為:

1 簡介
2 能源概論
3 化石燃料
4 核能
5 太陽、風與地熱能
6 水力發電與海洋能
7 生質能
8 氫能與燃料電池
9 發電科技
10 能源與環境

**22396 Introduction to Energy 3,R**

Energy is the key issue of whether human race and all the other lives can be sustained or not in earth for the future. Energy resources usually includes: fossil fuel, nuclear power, and renewable energy. However, since the energy stored in earth is limited, it can be dissipated very quickly and inefficiently if governments/citizens of countries are not aware of the basic ideas and do not have a good knowledge or policy of energy usage management. An inefficient way (or, in a wrong way) of the energy usage will definitely bring in the result of economy recession or depression, civilization development backward, and even to the disaster of human races annihilation.
Therefore, in this course, we provide the knowledge of energy education from different prospects and point of views, introduce the idea and techniques of how to preserve and use energy efficiently. Also the issues of environment protection related with energy usage and storage methods. Main subjects discussed will be:

1.fossil fuel
2.nuclear energy
3.solar, wind, geothermal energy
4.hydraulic energy (hydroelectric power、marine current and Tidal energy)
5.bioenergy(biofuel)
6.hydrogen energy and fuel cell
7.basic principle of electric generation
8.issues of environment protection

**22222 基礎數學 3,必**

本基礎數學課程是針對幾個學習微積分所需理解的重要概念而設計。這門課程可提供 學生代數與三角函數紮實的基礎。主要的內容包含了線性、多項式、片斷、指數、對數與三角函數的觀念介紹。此外，簡單的矩陣運算亦會在課程中介紹。學生將會學習如何以符號、圖型和數值方法來操作這些函數。

**22222 Fundamental mathematics 3,R**

This fundamental math course focuses on various topics that are important to the study of calculus. Through this course students will acquire a solid foundation in algebra and trigonometry.

The topic is placed on understanding the concepts of linear, polynomial, piecewise, exponential, logarithmic, and trigonometric function. In addition, simple matrix operation will be covered in this course. Students will learn to work these functions in symbolic, graphical, and numerical form.

**22394 熱學工程概論 3, 必**

本課程要旨為介紹介紹熱力學與熱傳學中的基本概念、各種現象及實際工程上的應用，並以有限元素軟體輔助教學實習。內容包含: 基本概念，特性與狀態，熱力學第一定律，熱力學第二定律、熱機原理(封閉循環: Carnot Cycle, Otto Cycle, Diesel Cycle，內燃機/四衝程引擎,外燃機，冷凍原理)，熱傳學中的熱傳導(擴散方程式、穩態分析、散熱片、暫態分析)、對流理論簡介(強制與自然對流)。本課程同時教授學生利用電腦以及計算(數值)方法，配合商用有限元素軟體 COSMOS/M 與 Gambit-ANSYS/Fluent 將熱傳學中的實際工程問題，在電腦中進行視覺性的探討與整合分析。本課程教學重點在於如何在電腦中建模、切割網格、設定合理的邊界條件、求解、分析結果。應用：散熱片分析和設計原理、IC 封裝/電子產品之散熱、殼管式熱交換器之對流熱傳分析、內燃機之散熱分析，輻射熱傳和相變化:雷射切割的分析(材料的融化)。練習的實際工程問題包含:

**1.**散熱片設計
**2.**IC 封裝/電子產品之散熱
**3.**殼管式熱交換器之對流熱傳分析
**4.**內燃機之散熱分析

**22394 Introduction of Thermal Engineering 3, R**

The purpose of this course is to give undergraduate students a solid knowledge about the basic principles of thermal engineering, which involves knowledge of thermodynamics and heat transfer. The contents of this includes: fundamental concepts, first and second laws of thermodynamics, thermodynamic cycles and heat transfer principles. Also included in this course is an introduction of software as ANSYS/FLUENT which help students use the computer/numerical methods to solve real world heat transfer problems.
The contents of heat transfer include:
1. Introduction of heat transfer.
2. Application of heat transfer.
3. heat conduction.
4. heat convection.
5. heat exchange design.
6. thermal radiation.

**40006 工程圖學實習 1, 必**

本課程使學生瞭解 CNS 工程製圖之標準與方法，培養學生識圖的能力，並能應用投影與展開原理，正確、清晰、美觀、迅速繪製各種機械工作零件與組合圖，並使學生熟悉各種平面與立體繪圖的觀念與技術技能，養成圖學表現與溝通的實務應用能力。

**40006Engineering Graphics and Practice 1,R**

This course enables students to understand the CNS standard and methods of engineering drawing, and cultivate students to have the abilities of knowing graphics and to apply the principles of projection and expanding for drawing various mechanical parts and assemble graphics. Moreover, this course familiarize students with a variety of two- and three-dimensional graphics concepts and drawing skills, and equip students with the ability to develop practical applications and drawing

communications.

**55149 靜力學 3,必**

本課程之目的主要是介紹基本的力學觀念及原則，包括了質點靜力學、剛體的等效力系、剛體平衡、均佈力，以及結構的分析。

**55149Statics 3,R**

The coverage of this course includes fundamental concepts and principles of mechanics ; statics of particles ; equivalent systems of forces for rigid bodies ; equilibrium of rigid bodies ; distributed forces ; and analysis of structures.

**22291 電腦輔助機械製圖 3, 必**

本課程使學生熟悉機械工程製圖之正確繪圖方法以及電腦輔助機械製圖軟體之使用。培養學生識圖能力，並能應用投影原理，以 AutoCAD 或 SolidWorks 軟體繪製機械工作圖，並使學生瞭解電腦繪圖的觀念與技巧，養成電腦輔助繪圖的實務應用能力。

**22291Computer-aided Mechanical Drawing 3, R**

This course equips students with regular operations on the mechanical engineering drawing and the use of computer-aided mechanical drawing. Students are trained to acquaint the mechanical drawing and to use the projection method to complete mechanical drawing by AutoCAD and SolidWorks software. This course trains students to understand the concept and technique of CAD and to possess the skill of practical application on CAD.

**20048 工廠實習 2, 必**

本課程內容包含工廠使規則及安全規定說明，加工零組件之組合成成品，及兩大類別之實習項目：(1)鋸削及砂輪機，車床，鑽床及銑床，磨床和數控工具機之操作。(2)砂模鑄造，精密鑄造，銲接，熱處理，板金加工和鉗工。

**20048 Machine Shop Practice 2,R**

The content of this course include the description of the usage rules and safety requirements, to assembly the fabricated components to be a product, and two group items : (1)The operations of band machining and hard polishing, engine lathe, drilling and milling machines grinders, and numerical control machine tools. (2)Sand casting, precision casting, welding, heat treatment, sheet forming, and bench work

**40306 材料力學 3,必**

本課程介紹的主題有受軸向力、扭力及彎矩等作用之構件的分析及設計，並包含應力、應變、彈性及非彈性行為和應變能的基本觀念。其它一般性主題包含應力與應變的轉換，應力集中，樑之撓度，柱之行為和能量法。特殊主題則有熱效應，預應變效應，壓力容器，非等載面構件，不連續函數，剪力中心和非彈性彎曲。

**40306 Mechanics of Materials 3,R**

The topics introduced in this course include the analysis and design of structural member subjected to axial load, torsion and bending, as well as such fundamental concepts as stress, strain, elastic, and inelastic behavior, and strain energy. Other topics of general interest are the transformation of stress and strain, stress concentrations, deflections of beam, behavior of columns, and energy methods. More specialized topics are thermal and prestrain effects, pressure vessels, nonprismatic members, discontinuity functions, shear center. and inelastic bending.

**21350 材料實驗 1,必**

在使材料本科同學，對於各種相關的材料實驗及技巧有基本的認識。本課程探討傳統及近代陶瓷的原料特性、基本物理性質檢測、及各種不同成形法。基本物性測試包括；粒度測試、密度測試、及黏度測試。成形法的課程內容有；泥陶瓷粉末之分散實驗、陶瓷粉末注漿成形法、

理論密度量測與計算、陶瓷薄帶的製造等。本課程除傳授相關的知識背景外，並特別強調學生的實作與參與使學生認識陶瓷製造的基本過程，包括傳統陶瓷，結構陶瓷，及玻璃等製程。另外，藉由 SEM 與 XRD 的分析，也使學生了解陶瓷材料在燒結後顯微結構的變化。

**21350 Fundamental Experiments in Materials 1,R**

This course is designed to introduce the ceramic, basic reaction principles and fundamental approach of analysis of the inorganic substance occurred. The content includes the dielectric properties and compositions of ceramics. The experiment is designed to introduce students to the knowledge and implementation of characteristics of ceramics by microstructural analysis, particle dispersion, packing density, theory density calculation and sintering kinetic.

**21570 機械製造 3, 必**

本課程介紹機械元件之製造原理與方法，著重系統化之說明。製造對象包含金屬、高分子 、陶瓷及半導體等材料，製造方法包含鑄造、塑性成形、切削、銲接、熱處理、表面處理、粉末冶金及非傳統加工等。探討重點在於結合材料之特性及設計之理念，輔以工具機、工模夾治刀具及量測與檢驗的知識，配合生產管理及電腦輔助製造系統之學理與實務，建立一完整性之製造系統觀念。

**21570 Manufacturing Processes and Systems 3,R**

This course introduces the manufacturing principles and methods of the mechanical components, emphasizing on the systematic descriptions. The discussed materials include metals, polymers, ceramics and semiconductors. The manufacturing methods include casting, plastic deformation, machining, welding, heat treatment, surface treatment, powder metallurgy and nontraditional processes. The investigation of material properties and design concepts are discussed. In addition, the knowledge of machine tools, jigs, fixtures and tools, and metrology and inspections are discussed. The comprehensive manufacturing concept is built by combining the principles and techniques of the production management and computer-aided manufacturing systems.

**20036 工程材料 3, 必**

概論、原子結構與鍵結、晶體結構與缺陷、相平衡、材料物化性、材料強化、金屬材料、陶瓷材料、聚合材料、複合材料、磁料、電性、材料使用與選擇。

**20036 Materials Science and Engineering 3, R**

Introduction , atomic structure and bonding. Crystal structures and imperfections, phase diagrsam . Mechanical and electrical properties, polymers , Biron, engineering alloy, ceramics, composites and magnetic materials, using and selection.

**22392 電腦輔助機械設計與實習 (1) 3,必**

本課程在讓學生運用 CAD 及 CAE 軟體進行簡易機構與機械元件之設計，並教授機構學及機械元件設計之基礎原理,透過分組實習讓學生在電腦的實作中更容易了解機構及機械之作動方式及如何分析機械系統之強度及動力特性。本課程為第一部份，著重在簡易機構之電腦輔助運動設計及分析，以及如何判讀分析結果。

**22392 Elements of Mechanism and Practice (1) 3,R**

This course helps students learning about how to apply CAD and CAE softwares on mechanism and mechinery design and the design skill of mechanisms and machine elements. Students can realize the motion of mechanisms, and strength and dynamic characteristics of the machinery system more easily through team-work and practice. This course is the first part and it focuses on design and analysis of the simple mechanisms using the CAD and CAE softwares, and interpretation of analysis results.

**22390 應用電子學與實習 3, 必**

內容詳實，深入淺出的理論說明且豐富詳盡的範例，適合於控制、冷凍空調與電子修護等相關領域的應用電路。每一章都有立即練習與學後評量以強化練習，瞭解同學的學習成效。 內容詳實，深入淺出的理論說明且豐富詳盡的範例，提升學生學習意願。(1)先簡述上課要學習的東西和內容。(2)例題說明與分析、示範講解以及學生自我模擬練習。(3)課後進行簡單的測驗來知道學生的學習狀況。

教導學生正確的實驗教室器材使用方法與安全認知： (a)教導工業安全與衛生， (b)手工具的選擇及使用安全 2.瞭解實作與電子儀器的操作： (a)手工焊接的方法， (b)焊接練習， (c)綁線技術， (d)識別電子元件，電子元件的特性與規格， (e)三用電錶的認識及基本量測，三用電錶的使用探討， (f)電阻的量測與計算， (g)直流電源供應器的認識與使用， 訊號產生器的認識與使用， (i)示波器器的認識與使用， 3.電學電路實習課程如: (a)克西荷夫電壓電流定理，並聯電路電壓與電流量測， (b)串聯電路電壓與電流量測， (c)簡易印刷電路板的製作， (d)電子電路的實作

**22390 Application Electronics and Practice 3,R**

Informative, Theoretical explanation in simple terms, and full and detailed examples, Suitable for control, refrigeration and air conditioning and electrical repair and other related fields of application circuits. Each chapter has practice immediately after the assessment and learning in order to strengthen practice, understand students' learning, content full and accurate, The informative, easy to understand and enrich the theoretical description of detailed examples to enhance students' willingness to learn. <1> will explain briefly the class of things to learn and content. <2> Example description and analysis, lectures and demonstrations and student self-simulation exercises. <3> After-school simple quiz to know that student learning conditions.

1.Experimental classroom to teach students the proper use of equipment and safety awareness： (a)Teach Industrial Safety and Health (b) The choice of tools and the use of safety 2. Learn implementation and operation of electronic equipment: (a) Hand soldering methods (b) Welding Practice (c) Tie wire technology(d) Recognize of electronic components，Characteristics and specifications of electronic components (e) Multimeter awareness and basic measurement，Explore the use of Multimeter (f) Resistance measurements and calculations (g) Understanding and using the DC power supply (h) Understanding and using the Signal generator (i) Understanding and using the oscilloscope 3. Electrical circuit Internship Program: (a) Kirchhoff's voltage current law，Parallel circuit voltage and current measurements (b) Series circuit voltage and current measurements (c) Simple printed circuit board production (d) Electronic circuit implementatio

**21057 精密量測與實習 3, 必**

使學生了解不同類型的物件，可用何種量具或儀器(接觸式或非接觸式)，做量測或檢驗觀念，且熟悉各種量具及儀器的正確操作方法。

**21057 Precision Measurement and Practice 3,R**

To enable students to understand the different types of objects that can be used, or what kind of measuring instrument (contact or contactless), doing the measurement or test ideas, and are familiar with a variety of measuring tools and instruments for proper operation.

**22400 電腦數值控制工具機與實習 3,必**

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。

**22400 Computer Numerically Controlled Machine Tools and Practice 3,R**

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 cam be achieved.

**自動化工程　　3　必**

以『控制』的觀念為主，培養自動化控制的能力，並能應用機器設計的能力，以構想出一套自動化設備之能力。課程內容包括自動化流程的設計，自動化元件與感測器使用知識，自動化裝配系統的設計，可程式控制器技術，此課程培訓學生具有實務性的設計能力，使學生瞭解可程式邏輯控制器的程式撰寫觀念與技巧，養成可程式邏輯控制器的實務應用能力。

**Automatic Engineering　　3　R**

Automatic Engineering is very important technique applied in industrious area. This course will introduce the design automation process, the useful knowledge of automatic devices and sensors, the automatic assemble system design and PLCC controller technique. The goal of this course will train students with the strong fundamental discipline automatic engineering and practical design ability.

**程式設計與實習　　3　必**

本課程將介紹應用 MATLAB 軟體於各種工程常見數學問題之理論與數值解析方法。課程中將介紹 MATLAB 軟體應用之基本指令，包括：數值運算、函數使用、陣列應用、邏輯控制、迴圈控制、函數庫、圖形繪製、視窗應用等主題。數值分析方法之應用，包括：數值微分、數值積分、非線性方程式、插值法、矩陣運算、聯立方程式及特徵值問題、常微分方程式、偏微分方程式、統計分析等。

**Program language and practice　　3　R**

This course introduces the application of MATLAB software to theoretically and numerically solve various kinds of engineering mathematical problems. The course will introduce MATLAB Basic commands, including numerical operation, functions, array, logic control, loop control, subroutines, graphic control, and graphic-user-interface (GUI). Application of numerical analysis methods includes numerical difference, numerical integration, nonlinear equation, interpolation method, matrix operation, linear system equation, eigenvalue problem, ordinary differential equation (ODE), partial differential equation (PDE) and statistical analysis.

**22391 自動控制與實習　　3,必**

本課程學習控制系統的分析與設計，認識系統方塊圖、訊號流程圖、系統元件之數學模型、控制器的設計與系統性能分析等；數學模型包括系統轉換函數和狀態空間模型。性能分析包括閉回路控制系統特性，瞬時反應分析, 系統穩定性、反應指標法設計及根軌分析法等。本課程並包含兩小時應用 MATLAB 進行控制系統分析與設計的實習。

**22391 Automatic Control and Lab　　3,R**

This course studies control system analysis and design. It introduce system block diagram, signal flow graph, mathematical models, controller design and system performance analysis. System performance analyses and designs using both transfer function and state space model. Other topics include feedback control system characteristics, transient-response analysis, system stability, performance index design and root-locus method. The course also includes 2 hours computer simulation of control system analysis and design using Matlab Tools.

**22402 可程式控制與實習　　3,必**

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。本課程要旨為訓練學生能實際操作可程式控制器之能力。包括，程式撰寫，週邊設備架設，系統安裝與維修。

**22402Programmable Logic Controller and internship 3,R**

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 Maintain and Installing of PLC. The aim of this course is to develop the students with the ability of operating programmable controller. The course's subjects include the PLC programming , the peripherals setup, and systems installation and maintain.

**22756 進階電腦數值控制工具機 3,必**

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。

**22756 Advanced computer numerical controlled machine tools 3,R**

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 cam be achieved.

**22452 機電整合與實習 3,必**

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。

**22452 Mechatronics and lab 3,R**

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 simulation lab is provided to assist major topics study.

**多軸複合加工 3,必**

介紹車銑複合加工機的基本構造，操作面盤的功能及使用，加工程式的設計，工作定位夾持，刀具選用及補正操作。經由實際加工，熟練車銑複合加工機的操作，工件尺寸的測量，完成各類工件的精密加工。

**CNC Turning and Milling Complex Machines internships 3,R**

The fundamental construct of a CNC turning and milling complex Machines tool is introduced. The functions and operations of the control panel, the design 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 turning and milling complex Machines, and learning the measuring methods, most kinds of precision machined components came be achieved.

**21290 工廠管理 3,必**

培養健全之機械相關產業之技術人才，能擔任機械之元件製造、裝配、操作、保養及簡易復護等實用知識與技能，使用機具設備、機械製圖、識圖之能力，培養學生具備敬業、負責、勤奮、合作等職業道德及良好安全衛生工作習慣，使用量測設備之能力、機械工作之能力、培育具有在相關專業資域繼續進修、專題製作與研究發展的能力。

**21290 Factory Management 3,R**

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.

# 機械工程系(所) 產專班 課程與核心能力關聯表 (108 及 109 學年度入學適用)

| 【專業必修】 | | | | | | |
|---|---|---|---|---|---|---|
| 科目名稱 \ 核心能力項目 | 1. 具有運用數學、科學及工程知識進行分析與解釋數據之能力。 | 2. 具有設計與規劃統工程系並執行工程實務之能力。 | 3. 具有專業倫理與社會責任之認知。 | 4. 具有團隊合作及協調溝通之能力。 | 5. 具有對社會及國際時事議題之工程判斷能力。 | 6. 具有獨立思考、創新與終身學習的習慣與能力。 |
| 產業實務實習(1) | ● | ● | ● | ● | | ● |
| 產業實務實習(2) | ● | ● | ● | ● | | ● |
| 產業實務實習(3) | ● | ● | ● | ● | | ● |
| 產業實務實習(4) | ● | ● | ● | ● | | ● |
| 產業實務實習(5) | ● | ● | ● | ● | | ● |
| 產業實務實習(6) | ● | ● | ● | ● | | ● |
| 產業實務實習(7) | ● | ● | ● | ● | | ● |
| 產業實務實習(8) | ● | ● | ● | ● | | ● |
| 普通物理學(1) | ● | ● | | | | ● |
| 普通物理學實驗(1) | ● | ● | | | | ● |
| 能源概論 | ● | ● | | | | ● |
| 基礎數學 | ● | ● | | | | |
| 熱學工程概論 | ● | ● | | | | ● |
| 工程圖學實習 | ● | ● | | | | ● |
| 靜力學 | ● | ● | | ● | | ● |
| 電腦輔助機械製圖 | ● | ● | | ● | | ● |
| 工廠實習 | ● | ● | | ● | | ● |
| 材料力學 | ● | ● | ● | ● | | ● |
| 材料實驗 | ● | ● | ● | ● | | ● |
| 機械製造 | ● | ● | ● | ● | | ● |
| 工程材料 | ● | ● | ● | ● | | ● |
| 電腦輔助機械設計與實習 | ● | ● | ● | ● | | ● |
| 應用電子學與實習 | ● | ● | ● | ● | | ● |
| 精密量測與實習 | ● | ● | ● | ● | | ● |
| 電腦數值控制工具機與實習 | ● | ● | ● | ● | | ● |
| 自動化工程 | ● | ● | ● | ● | ● | ● |
| 程式設計與實習 | | ● | | ● | | ● |
| 自動控制與實習 | | ● | | ● | | ● |
| 可程式控制與實習 | | ● | | ● | | ● |
| 進階電腦數值控制工具機 | ● | ● | | ● | | ● |
| 機電整合與實習 | ● | ● | | ● | | ● |

| | | | | | | |
|---|---|---|---|---|---|---|
| 多軸複合加工 | | ● | | | ● | ● |
| 工廠管理 | | ● | | ● | | ● |

# 機械工程 系(所) 產攜班 課程與核心能力之關聯檢核表 (108 及 109 學年度入學適用)

| 核心能力 | 能力指標與<br>核心素養 | 對應課程 | 檢核機制 |
|---|---|---|---|
| 1. 具有運用數學、科學及工程知識進行分析與解釋數據之能力。 | 1. 具備力學與材料基礎<br>2. 機械繪圖與識圖能力<br>3. 程式控制與設計<br>4. CAD/CAE/CAM 應用 | 產業實務實習(1)~產業實務實習(8)<br>普通物理學(1)、普通物理學實驗(1)、能源概論、基礎數學、熱學工程概論、工程圖學實習、靜力學、電腦輔助機械製圖、工廠實習、材料力學、材料實驗、機械製造、工程材料、電腦輔助機械設計與實習、應用電子學與實習、精密量測與實習、電腦數值控制工具機與實習、自動化工程、程式設計與實習、自動控制與實習、可程式控制與實習、進階電腦數值控制工具機、機電系統整合與實習、多軸複合加工、工廠管理 | 1.修畢本系 100 學分之必修課程。<br>2.修畢外語實務課程並通過學校外語檢定。<br>3.具有校外工廠實習之相關證明。 |
| 2. 具有設計與規劃工程系統並執行工程實務之能力。 | 1. 實驗規劃與操作<br>2. 機械設計與加工實務<br>3. 具備證照專業技能 | 產業實務實習(1)~產業實務實習(8)<br>普通物理學(1)、普通物理學實驗(1)、能源概論、基礎數學、熱學工程概論、工程圖學實習、靜力學、電腦輔助機械製圖、工廠實習、材料力學、材料實驗、機械製造、工程材料、電腦輔助機械設計與實習、應用電子學與實習、精密量測與實習、電腦數值控制工具機與實習、自動化工程、程式設計與實習、自動控制與實習、可程式控制與實習、進階電腦數值控制工具機、機電系統整合與實習、多軸複合加工、工廠管理 | |
| 3. 具有專業倫理與社會責任之認知。 | 1. 科技法律認知<br>2. 重視學術倫理 | 產業實務實習(1)~產業實務實習(8)<br>普通物理學(1)、普通物理學實驗(1)、能源概論、基礎數學、熱學工程概論、工程圖學實習、靜力學、電腦輔助機械製圖、工廠實習、材料力學、材料實驗、機械製造、工程材料、電腦輔助機械設計與實習、應用電子學與實習、精密量測與實習、電腦數值控制工具機與實習、自動化工程、程式設計與實習、自動控制與實習、可程式控制與實習、進階電腦數值控制工具機、機電系統整合與實習、多軸複合加工、工廠管理 | |

| | | | |
|---|---|---|---|
| 4. 具有團隊合作及溝通協調之能力。 | 1. 口語表達<br>2. 工程寫作<br>3. 領導與協調<br>4. 規劃與整合 | 產業實務實習(1)~產業實務實習(8)<br>普通物理學(1)、普通物理學實驗(1)、能源概論、基礎數學、熱學工程概論、工程圖學實習、靜力學、電腦輔助機械製圖、工廠實習、材料力學、材料實驗、機械製造、工程材料、電腦輔助機械設計與實習、應用電子學與實習、精密量測與實習、電腦數值控制工具機與實習、自動化工程、程式設計與實習、自動控制與實習、可程式控制與實習、進階電腦數值控制工具機、機電系統整合與實習、多軸複合加工、工廠管理 | |
| 5. 具有對社會及國際時事議題之判斷能力。 | 1. 理解科技發展及趨勢<br>2. 具備外語能力 | 產業實務實習(1)~產業實務實習(8)<br>普通物理學(1)、普通物理學實驗(1)、能源概論、基礎數學、熱學工程概論、工程圖學實習、靜力學、電腦輔助機械製圖、工廠實習、材料力學、材料實驗、機械製造、工程材料、電腦輔助機械設計與實習、應用電子學與實習、精密量測與實習、電腦數值控制工具機與實習、自動化工程、程式設計與實習、自動控制與實習、可程式控制與實習、進階電腦數值控制工具機、機電系統整合與實習、多軸複合加工、工廠管理 | |
| 6. 具有獨立思考、創新與終身學習的習慣與能力。 | 1. 工程創新<br>2. 終身學習<br>3. 獨立思考 | 產業實務實習(1)~產業實務實習(8)<br>普通物理學(1)、普通物理學實驗(1)、能源概論、基礎數學、熱學工程概論、工程圖學實習、靜力學、電腦輔助機械製圖、工廠實習、材料力學、材料實驗、機械製造、工程材料、電腦輔助機械設計與實習、應用電子學與實習、精密量測與實習、電腦數值控制工具機與實習、自動化工程、程式設計與實習、自動控制與實習、可程式控制與實習、進階電腦數值控制工具機、機電系統整合與實習、多軸複合加工、工廠管理 | |

傳閱附件 6----休閒運動健康系 109 學年度入學產專班課程規劃案

# 休閒運動健康系實用休閒觀光專班

## (一)教育目標

本系結合運動、休閒、醫療保健、管理及社會等現代科學及實務，培養兼具國際宏觀、理論與實務相互應用之休閒運動管理與保健促進指導專業人才。

1. 休閒產業經營管理專業人才。
2. 健康促進與傷害防護專業人才。
3. 運動指導專業人才。

## (二)校定共同必修科目

| 中文科目名稱<br>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 | |
| 通識選項課程<br>General Education | 12 | 2 | 2 | 2 | 2 | 2 | | | 2 | 人文學科：2 門<br>社會科學：2 門<br>自然與生命科學：1 門<br>數理與應用科學：1 門 |
| 國文<br>Chinese | 4 | 2 | 2 | | | | | | | 國文(閱讀與寫作)(1)<br>國文(閱讀與寫作)(2) |
| 大一英文<br>Freshman English | 4 | 2 | 2 | | | | | | | 大一英文(1)<br>大一英文(2) |
| 英語聽講練習 101~102<br>English Listening & Speaking Practice | 2 | 1 | 1 | | | | | | | 英語聽講練習 101<br>英語聽講練習 102 |
| 憲法<br>Constitution | 2 | | | | | | | | 2 | |
| 體育<br>Physical Education | 2 | 1 | 1 | | | | | | | 一年級：<br>大一體育(1)、大一體育(2) |
| 通識教育講座<br>Lectures on General Education | 1 | | | | | | | | | 各系依序開課，開課學期不定 |
| 外語實務<br>Foreign Language Proficiency Test | 0 | 0 | | | | | | | | 畢業前修畢<br>通過標準依「外語實務課程實施要點」規定 |
| 合計 | 27 | 8 | 8 | 2 | 2 | 2 | 0 | 0 | 4 | |

## (三)學院共同必修科目

| 中文科目名稱<br>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 | |
| 心理學<br>Psychology | 2 | 2 | | | | | | | | |
| 社會學<br>Sociology | 2 | 2 | | | | | | | | |
| 電子計算機概論<br>Introduction to Computers | 0 | | | 0 | | | | | | |
| 合計 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 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 | |
| 休閒遊憩導論<br>Introduction to Leisure and Recreation | 2 | 2 | | | | | | | | |
| 人體解剖學<br>Human Anatomy | 2 | 2 | | | | | | | | |
| 舞蹈運動與指導<br>Dance and Guidance | 2 | 2 | | | | | | | | |
| 戶外遊憩管理<br>Outdoor Recreation Management | 2 | | 2 | | | | | | | |
| 觀光學<br>Introduction to Tourism | 2 | | 2 | | | | | | | |
| 基礎人體生理學<br>Human Physiology | 2 | | 2 | | | | | | | |
| 運動科學導論<br>Introduction to Sports Science | 2 | | 2 | | | | | | | |
| 休閒產業經營管理<br>Leisure Industry Management | 2 | | | 2 | | | | | | |
| 統計學<br>Statistics | 2 | | | 2 | | | | | | |
| 體驗與探索教育<br>Experiential Education | 2 | | | 2 | | | | | | |
| 運動生理學與能量代謝<br>Exercise Physiology and Energy Metabolism | 2 | | | 2 | | | | | | |
| 急救學與實驗<br>First Aid and Practicum | 2 | | | 2 | | | | | | |
| 運動行銷學<br>Sport Marketing | 2 | | | | 2 | | | | | |
| 服務與解說實務<br>Service and Guidance-Skills | 2 | | | | 2 | | | | | |
| 運動保健學<br>Principles of Athletic Training | 2 | | | | 2 | | | | | |
| 體適能測驗與評量<br>Testing and Assessment in Physical Fitness | 2 | | | | 2 | | | | | |
| 水上活動與安全指導<br>Coaching of Water-based Sports and Safety | 2 | | | | 2 | | | | | |
| 休閒運動職場實務<br>On job training and practice in leisure and sport businesses | 2 | | | | | 2 | | | | |

| 中<br>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 | |
| 學術論文寫作方法<br>Thesis Writing | 2 | | | | | 2 | | | | |
| 運動心理學<br>Sport Psychology | 2 | | | | | 2 | | | | |
| 運動處方<br>Exercise Prescription | 2 | | | | | 2 | | | | |
| 應用統計<br>Applied Statistics | 2 | | | | | 2 | | | | |
| 休閒運動經營診斷與分析<br>Analysis and Diagnoses of Recreation Sport Management | 2 | | | | | | 2 | | | |
| 休閒觀光事件管理<br>Event Management in Leisure & Tourism | 2 | | | | | | 2 | | | |
| 休閒產業個案分析<br>Case Analysis of Leisure Industry | 2 | | | | | | 2 | | | |
| 身體活動評估實務<br>Practice for physical activity assessment | 2 | | | | | | | 2 | | |
| 運動健康實務<br>Application of Exercise and Health Promotion | 2 | | | | | | | 2 | | |
| 活動指導實務<br>Practice of activities directing | 2 | | | | | | | 2 | | |
| 實務專題(1)<br>Special Projects(1) | 2 | | | | | | | | 2 | |
| 休閒教育<br>Leisure Education | 2 | | | | | | | | 2 | |
| 休閒活動規劃與設計<br>Curriculum and Activities Design for Recreation Sport | 2 | | | | | | | | 2 | |
| 合計 | 62 | 6 | 8 | 10 | 10 | 10 | 6 | 6 | 6 | |

(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 | |
| 運動與健康專業英語<br>English of Sport | 2 | 2 | | | | | | | | |
| 運動知能與賞析<br>Sport Relish | 2 | 2 | | | | | | | | |
| 攀岩運動與指導<br>Coaching of Sport Climbing | 2 | 2 | | | | | | | | |
| 海洋觀光<br>Marine Tourism | 2 | 2 | | | | | | | | |
| 休閒經濟學<br>Economy of Leisure | 2 | | 2 | | | | | | | |
| 生態旅遊<br>Ecology Traveling | 2 | | 2 | | | | | | | |
| 運動體能訓練<br>Sports Conditioning Training | 2 | | 2 | | | | | | | |
| 徒手肌肉功能測試<br>Manual muscle testing and function | 2 | | 2 | | | | | | | |
| 運動醫學概論<br>Introduction of Sport Medicine | 2 | | 2 | | | | | | | |
| 有氧舞蹈運動與指導<br>Aerobic Dance Exercise and Coaching | 2 | | 2 | | | | | | | |
| 體適能活動與指導<br>Physical Fitness and Coaching | 2 | | 2 | | | | | | | |
| 羽球運動與指導<br>Coaching of Badminton | 2 | | 2 | | | | | | | |
| 進階攀岩運動與指導<br>Advanced Coaching of Sport Climbing | 2 | | 2 | | | | | | | |
| 服務管理<br>Service Management | 2 | | 2 | | | | | | | |
| 戶外遊憩領導<br>Leadership for Outdoor Recreation | 2 | | 2 | | | | | | | |
| 休閒人力資源管理<br>Human Resource Management of Leisure | 2 | | | 2 | | | | | | |
| 領隊與導遊實務<br>Practice of Leadership and Guidance | 2 | | | 2 | | | | | | |
| 旅運經營學<br>Travel Industry Management | 2 | | | 2 | | | | | | |
| 餐飲服務技術及實習<br>The Skill of Restaurant Service and Practice | 3 | | | 3 | | | | | | |

| 中<br>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 | |
| 營養學概論<br>Basic Nutrition | 2 | | | 2 | | | | | | |
| 運動推廣概論<br>Introductions of Promotion Strategies for Exercise | 2 | | | 2 | | | | | | |
| 社區健康營造<br>Community Health Building | 2 | | | 2 | | | | | | |
| 健康管理<br>Health Promotion and Disease Prevention | 2 | | | 2 | | | | | | |
| 運動傷害評估學<br>Recognition & Evaluation of Athletic Injury | 2 | | | 2 | | | | | | |
| 肌能系貼紮應用<br>Applications of Kinesio Tape | 2 | | | 2 | | | | | | |
| 運動傷害防護學與實驗(1)<br>Principle and Practice in Athletic Training (1) | 2 | | | 2 | | | | | | |
| 進階羽球運動與指導<br>Advanced Coaching of Badminton | 2 | | | 2 | | | | | | |
| 桌球運動與指導<br>Coaching of Table Tennis | 2 | | | 2 | | | | | | |
| 繩索挑戰安全操作<br>Safety Practice for Challenge Courses | 2 | | | 2 | | | | | | |
| 休閒事業行銷研究<br>Marketing Research for Leisure Industry | 2 | | | 2 | | | | | | |
| 休閒運動與法規<br>Recreation Sport and Laws | 2 | | | | 2 | | | | | |
| 戶外冒險教育<br>Outdoor Adventure Education | 2 | | | | 2 | | | | | |
| 遊程設計<br>Package Tours Management | 2 | | | | 2 | | | | | |
| 休閒行為<br>Leisure Behavior | 2 | | | | 2 | | | | | |
| 營隊籌辦與管理<br>Organization and Management for Camps | 2 | | | | 2 | | | | | |
| 野外求生<br>Outdoor Survival | 2 | | | | 2 | | | | | |
| 客房管理與實習<br>House keep and practice | 3 | | | | 3 | | | | | |
| 健康飲食行為<br>Diet of Sport Behavior | 2 | | | | 2 | | | | | |
| 運動治療操作學<br>Exercise therapy and manipulation | 2 | | | | 2 | | | | | |

| 中文科目名稱<br>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 | |
| 運動傷害防護學與實驗(2)<br>Principle and Practice in Athletic Training (2) | 2 | | | | 2 | | | | | |
| 進階桌球運動與指導<br>Advanced Coaching of Table Tennis | 2 | | | | 2 | | | | | |
| 網球運動與指導<br>Coaching of Tennis | 2 | | | | 2 | | | | | |
| 進階繩索挑戰安全操作<br>Advanced Safety Practice for Challenge Courses | 2 | | | | 2 | | | | | |
| 水域遊憩管理<br>Water Recreation Management | 2 | | | | 2 | | | | | |
| 個人運動指導<br>Personal Exercise Trainer | 2 | | | | 2 | | | | | |
| 高爾夫球運動與指導<br>Coaching of Golf | 2 | | | | 2 | | | | | |
| 運動與休閒社會學<br>Sports Sociology | 2 | | | | | 2 | | | | |
| 休閒民宿經營與管理<br>Management of Tourist Home | 2 | | | | | 2 | | | | |
| 運動與休閒消費行為<br>Consumer Behavior in Sports and Exercise | 2 | | | | | 2 | | | | |
| 運動觀光<br>Sports Tourism | 2 | | | | | 2 | | | | |
| 休閒與年老<br>Leisure and Aging | 2 | | | | | 2 | | | | |
| 國際禮儀與實務<br>International manners and practice | 3 | | | | | 3 | | | | |
| 運動復健學<br>Rehabilitation Techniques in Sport Medicine | 2 | | | | | 2 | | | | |
| 運動貼紮與實驗<br>Strap/Bandaging Techniques in Athletic Training | 2 | | | | | 2 | | | | |
| 銀髮族體適能保健與實務<br>Elderly Physical Fitness and Health Promotion | 2 | | | | | 2 | | | | |
| 水域運動<br>Water Sport | 2 | | | | | 2 | | | | |
| 運動技術教材教法<br>Teaching Methods and Materials in Physical Education | 2 | | | | | 2 | | | | |
| 墊上核心運動與指導<br>Mat Science | 2 | | | | | 2 | | | | |

| 中文科目名稱<br>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 | |
| 單車運動與指導<br>Instruction in Cycle Sports | 2 | | | | | 2 | | | | |
| 鐵人三項運動與指導<br>Triathlon Training and Instruction | 2 | | | | | 2 | | | | |
| 進階水上活動與安全指導<br>Advanced Coaching of Water-Based Sport and Safety | 2 | | | | | 2 | | | | |
| 山域運動與指導<br>Mountaineering | 2 | | | | | 2 | | | | |
| 運動保健之經營與管理<br>Management Strategies in Athletic Training | 2 | | | | | 2 | | | | |
| 運動生物力學<br>Biomechanics | 2 | | | | | 2 | | | | |
| 運動科學文獻導讀<br>The Introduction to Sport Science Papers | 2 | | | | | 2 | | | | |
| 運動推拿指壓學<br>Sports/Exercise Massage and Practice | 2 | | | | | 2 | | | | |
| 運動防護實習(1)<br>Practicum in athletic training (1) | 2 | | | | | 2 | | | | |
| 瑜珈運動與指導<br>Coaching of Yoga | 2 | | | | | 2 | | | | |
| 職場體驗<br>The Experience of Worksite | 2 | | | | | | | | 2 | |
| 俱樂部經營與管理<br>Clubs Management | 2 | | | | | | | | 2 | |
| 旅遊電子商務<br>E-commerce on tourism | 2 | | | | | | | | 2 | |
| 冒險觀光(英文授課)<br>Adventure Tourism | 2 | | | | | | | | 2 | |
| 運動防護實習(2)<br>Practicum in athletic training (1) | 2 | | | | | | | | 2 | |
| 進階水域運動<br>Advanced Water Sport | 2 | | | | | | | | 2 | |
| 進階高爾夫球運動與指導<br>Advanced Coaching of Golf | 2 | | | | | | | | 2 | |
| 進階瑜珈運動與指導<br>Advanced Coaching of Yoga | 2 | | | | | | | | 2 | |
| 運動傷害防護儀器之運用<br>Athletic Training Principles for Therapeutic Modalities | 2 | | | | | | | | 2 | |
| 進階銀髮族體適能保健與實務<br>Advanced Elderly Physical Fitness and Health Promotion | 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 | |
| 進階墊上核心運動與指導<br>Advance Mat Science | 2 | | | | | | | | 2 | |
| 共通核心職能課程<br>Introduction of Job Capability | 2 | | | | | | | | 2 | |
| 特殊族群運動指導理論與實務<br>Ercise in Special Population:from Theory to Practice | 2 | | | | | | | | 2 | |
| 樂齡運動與健康促進<br>Aging Exercise and Health Promotion | 2 | | | | | | | | 2 | |
| | | | | | | | | | | |
| 合計 | 167 | 8 | 22 | 31 | 33 | 45 | 0 | 0 | 28 | |

# 休閒運動健康系實用休閒觀光專班

Department of Recreational Sport and Health Promotion

## 一、必修科目 Required Courses

**642001 休閒遊憩導論** 2必

本課程之主要目的在探討休閒、遊憩及運動之基本概念，以奠定學習休閒、遊憩及運動相關課程之基礎。授課內容包括：探討休閒(leisure)、遊憩(recreation)、運動(sports)之概念、意義及範籌、基本理論、歷史發展與現況、產業之實務經驗、研究方法等。

**642001 Introduction to Leisure and Recreation** 2**R**

The aim of this course is to introduce the theoretical perception of leisure, recreation and sports. It includes the meaning, scope, theory, history, trend, practical experience and research of leisure and recreation.

**642002 人體解剖學** 2 必

本課程之目的在教導學生了解人體之基本構造，包括肌肉、骨骼、關節、結締組織及神經系統等，並將其理論運用在運動指導與運動技能之發展。

**642002 Human Anatomy** 2 **R**

The purpose of this course is to introduce the basic structure of human body such as muscles, bones, joints, connective tissue and nervous system…etc., in addition, to apply this knowledge to develop the sports guidance and sports skills.

**642003 舞蹈運動與指導** 2 必

本課程之目的在透過舞蹈運動之教學，讓學生舞蹈運動之過程中，體驗身體律動之感受，學習控制自我肢體肌肉之能力，並從而學習各項舞蹈之基本知識及指導方式。其內容包括有氧舞蹈、韻律律動 、社交舞、現代舞等。

**642003 Dance and Guidance** 2 R

The purpose of this course is to introduce the comprehensive concept and skill of dance, in addition, to cultivate learners' guide ability in dance is also emphasized in this course.

**642004 戶外遊憩管理** 2 必

本課程旨在剖析相關的戶外遊憩活動與管理策略，增加同學之知能，並從事戶外遊憩管理相關案例研討與分析，促進同學實際瞭解。

**642004 Outdoor Recreation Management** 2 **R**

The aim of this course is to analyze related management strategy of outdoor recreational activities for students to enhance their knowledge of this field. This curriculum also examines the related cases of outdoor recreational activities for students to enhance their understanding.

**642005 觀光學** 2 必

本課程旨於介紹觀光的重要性，觀光產業之基本組成及要素，其運作機制，觀光發展及環境變化對應之議題，並使學生瞭解觀光相關產業之發展趨勢。透過課程教導、分組討論、專題研討等教學方式加深學生對觀光產業的認識。

**642005 Introduction to Tourism** 2 **R**

The purpose of this course is to make students understand the importance of tourism, the realm of tourism, the tourism industry, the mechanism of tourism, the development of tourism and the issues of tourism and environment. Meanwhile, it is important to enable students to possess the sense of the development of tourism. In order to achieve this purpose, course teaching, group discussion, and studying specific issues will be employed in this course.

**642006 基礎人體生理學　　2　必**

本課程之目的在增進學生對於人體基礎生理構造及機轉之認識並以其為根基進而活用於運動專業領域。

**642006　Human Physiology　　2　R**

The purpose of this course is to introduce the physical structure of the human body, and the relationship between the human physiology and daily life. Students will apply this knowledge to the related courses after learning. It includes physical structure an dorgans of human body.

**642007 運動科學導論　　2　必**

本課程主要介紹運動生理學、運動心理學與運動生物力學在運動競技與一般人從事運動時的應用，並希望藉此課程深化學生對於運動科學的認知，提升未來對於修讀相關課程的基礎。

**642007　Introduction to Sports Science　　2　R**

This course introduces the sports physiology, sports psychology and sports biomechanics in athletic performance to engage with the general application and would like to deepen curriculum awareness of students' sports science, enhance the future basis for taking relevant courses.

**642008 休閒產業經營管理　　2　必**

本課程主要目的在培養休閒運動產業經營管理論與實務概念。授課內容包括：休閒運動服務的需求內容、商品化、產業組合、產業概況、永續經營及社會影響；休閒運動服務組織之評估分析理論與技術，包括策略、競爭力、服務作業、服務品質、承載量、財務收支、促銷運用等休閒運動服務產業之個案探討。

**642008　Leisure Industry Management　2　R**

The purpose of this course is to cultivate students to possess management theory and practical experience of recreational sports industry. The contents of this course include demand, commodity, industrial constitute, industrial profile, permanent operating and effects to society. The theory and technology of evaluation and analysis of the recreational sports service organization include strategy, competition capability, service operation, service quality, carrying capacity, financial balance and promotion.

**642009 統計學　　2　必**

本課程目的在教導學生了解基礎統計學原理，並正確使用統計分析軟體，正確解釋分析結果，並能正確呈現結果於正式報告中。

**642009　Statistics　　2　R**

The purpose of this course is to introduce the basic theory of statistics, teach students how to use statitics software properly, explain the output correctly, and to wrap up the results in the formal report.

**642010 體驗與探索教育　　2　必**

本課程主要目的在探討體驗教育在休閒運動產業之基本概念與應用技本課程主要目的在介紹體驗與探索教育領域之基本概念與技巧。授課內容包括：體驗教育的理論、平面探索活動、探索體驗活動與服務學習方案執行。

**642010 Experiential and Adventure Education 2 R**

The purpose of this course is to introduce the basic ideas and skills for experiential and adventure education. The contents of this course included: theory for experiential education, portable adventure activities, adventure activities and service-learning project.

**642011 運動生理學與能量代謝 2 必**

本課程目的為將人體生理學的知識應用在運動員，特別是當人體暴露在急性與慢性的身體活動時，人體結構與功能的改變。再者，運動時體內能量的來源與運用也是焦點之一。

**642011 Exercise Physiology and Energy Metabolism 2 R**

The purpose of this subject is to apply human physiology to people who engage in exercise, especially for the fact that the human functions and structures change when they expose to acute and chronic physical activities. Moreover, energy source and application during exercise are one of focuses in this subject.

**642012 急救學與實驗 2 必**

本課程之主要目的在教導學生了解急救學之理論與實際操作技巧，並能應用於運動領域中。

**642012 First Aid and Practicum 2 R**

The major purpose of this course is to introduce the theoretical concept of first aid. In addition, it is expected that students will learn and apply the first aid skills to practical circumstance.

**642013 運動行銷學 2 必**

本課程之目的在使學生正確瞭解休閒運動市場中消費者的需求，並透過行銷研究以擬定行銷策略以符合當前之休閒運動消費。

**642013 Sport Marketing 2 R**

The purpose of this course is to introduce the system of sports markets, in addition, by marketing research, students is expected to submit several proposals to improve the consumers' satisfactions.

**642014 服務與解說實務 2 必**

本課程之主要目的在教導學生了解與增進有關休閒運動場所(如：休閒運動俱樂部，國家風景區等)之服務禮節與解說技巧。

**642014 Service and Guidance-Skills 2 R**

The purpose of this course is to introduce the service and explanation-skills in the recreational sports settings.

**642015 運動保健學 2 必**

本課程之目的在藉由文獻之導讀，讓學生了解運動與身體保健間之相關性，進而能夠培養運動與疾病預防及疾病治療領域之正確概念。

**642015 Principles of Athletic Training 2 R**

The purpose of this course is to offer the comprehensive concept of sports and physical care; the relative topics include the relationship between sports and diseases prevention, and disease curing fields through literature review.

**642016 體適能測驗與評量** 2必

本課程之目的在培養學生習得各項體適能測驗之標準方式，並在實作過程中，訓練合宜之測驗態度及解說能力。對於測驗資料之蒐集與分析，也是本科目欲強調之目標之一。期能透過此項教學課程，使學生在面對不同的受測對象時，能夠對測驗的內容及結果，作詳盡的解說及提供正確的建議。

**642016 Testing and Assessment in Physical Fitness** 2 R

The main purpose of this course is to introduce the standard method of diverse physical fitness test, positive attitude, explanatory ability of data collecting and analysis during practical process.

**642017 水上活動與安全指導** **2必**

本課程之目的在於培養學生游泳技能與安全知識，並應用於教導、規劃、執行水域各類型休閒活動。

**642017 Coaching of Water-based Sports and Safety** **2**R

The purpose of this course is to introduce the basic swimming skills and safety knowledge. The related topics will include instruction/design abilities of recreational activities of waterside.

**642018 休閒運動職場實務** 2 必

此課程旨在於讓學生能至職場實際體驗工作情形與環境，增加實際工作經驗，了解職場運作情形及工作所需，以期學生於畢業後能迅速與職場銜接。

**642018 On job training and practice in leisure and sport businesses** 2 **R**

The purpose of this course is to make students experience the working environments and situations, helping them to understand how a leisure/sport business runs and what skills the business needs. This course can help students to fit into the working environment quickly.

**642019 學術論文寫作方法** **2** 必

本課程的宗旨在提昇學生的學術研究水準，教導學生對學術研究有正確的認識，並懂得基本的學術論文規格與寫作要領。本課程內容重點：包括學術論文寫作的基本概念、論文結構與論文規格、學術論文的寫作要領，以及論文寫作實習。

**642019 Thesis Writing** **2** R

The purpose of this course is to train writing abilities of essay and thesis. The main contents of this course are: to search literature reviews, to design thesis structures, to apply writing approaches, and relevance.

**642020 運動心理學** 2 必 馬

本課程之目的在介紹運動心理學之理論與實務，如動機參與、競賽焦慮、團隊凝聚力等理論，並教導學生應用心理輔助技巧於運動領域。

**642020 Sport Psychology** 2 **R**

The purpose of this course is to introduce the theory and practice of sport psychology. Topics included in the class are as follows: motivation for participation, sport stress, and team cohension. More importantly, students will learn how to apply psychological counseling techniques in sport field.

**642021 運動處方** 2 必

本課程之目的在教導學生建立正確之運動處方開立之概念，其內容包括肌肉適能、心肺適能、柔軟度、身體組成‧‧等之運動處方開立之原則。期透過課程之實際經驗，協助學生增進其運動指導及處方開立之正確觀念。

**642021 Exercise Prescription** 2 R

The object of this course is to teach students having correct concept of sports prescription, which include muscle fitness, cardio respiratory fitness, limpness, and body composition. Students will have the basic concept of sports guidance, and sports prescription through the actual practice.

**642022 休閒運動經營診斷與分析** 2 必

本課程之目的在介紹運動經營之相關理論與實務，並教導學生科學管理之技巧，對現休閒運動組織的經營迷思是加以探究，以增進學生對經營管理實務的了解。

**642022 Analysis and Diagnoses of Recreation Sport Management** 2 R

The purpose of this course is to introduce the theory of the management on recreational sports and its practical experiences, in addition, to take advantage of scientific management and to explore current situation to increase students' comprehension are also emphasized in this course.

**642023 休閒觀光事件管理** 2 必

本課程目的在介紹事件管理的意義和內涵，並透過實際個案的運作，讓學生學習如何去舉辦一個大型的休閒觀光賽會。

**642023 Event Management in Leisure & Tourism** 2 R

The purpose of this course is to introduce the meaning and connotation of event management and through the case operation lead students to learn to hold a big event in leisure & tourism.

**642024 休閒產業個案分析** 2 必

本課程聚焦在台灣當前相關的休閒產業個案介紹與分析，期能讓學生了解個案產業的利與弊以及它對休閒產業的發展有何影響。

**642024 Case Analysis of Leisure Industry** 2 R

The curriculum focuses on introduction and analysis of the case of leisure industry in Taiwan as to understand the advantages and shortage of the case of leisure industry and its influence for students.

**642025 身體活動評估實務** 2必

本課程之目的在於身體活動評估的實務應用與操作。學生有機會針對不同族群進行身體活動進行評估。此課程有助於日後開立運動處方及運動效果評估之能力。

**642025 Practice for physical activity assessment** 2R

The purpose of this course is to have students practice evaluating physical activity under various conditions. By doing so, students can have the opportunity to assess physical activity for different populations. It will help students to get the abilities of making exercise prescription and evaluating exercise effects.

**642026 運動健康實務** 2必

本課程的主要目的是希望學生將運動指導與健康促進的專業能力應用於職場上，培養學生正確的服務態度與學習能力，使其在畢業後能與職場順利銜接。

**642026 Application of Exercise and Health Promotion** 2R

The main purpose of this course is to guide students to exercise and health promotion expertise applied to the workplace, students learn the correct service attitude and ability to make it in the workplace after graduation and smooth transition.

**642027 活動指導實務** 2 必

此課程旨在於讓學生能有實際指導活動之經驗. 透過活動前的安排與規劃, 活動中的實際參與和指導, 以及活動後的檢討與反思, 經由實際的經驗來讓學生更具備活動指導的能力.

**642027 Practice of activities directing** 2 **R**

The purpose of this course is to enable students to obtain the experience of directing activities. Through the processes of planning, participating, directing, discussing and getting feedback, students can possess better skills and abilities of activities directing.

**642028 實務專題(1)** 2 必

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

**642028 Special Projects(1)** 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.

**642029 休閒教育** 2 必

本科目之目的為了解休閒教育的基礎及實行的方法。休閒教育的理論與實際操作方式將在本課程中討論以促進學生體驗休閒教育功能。

**642029 Leisure Education** 2 **R**

The purpose of this course is to provide the student with a basis understanding and the ability to conduct leisure education. Theories and practices of leisure education will be introduced in this course for students to be able to have the exploration of self and leisure.

**642030 應用統計** 2 必

本課程以介紹統計學域中的應用統計為主，除闡釋研究方法與統計方法中敘述統計與推論統計之應用外，並藉由 Excel &SPSS 等套裝軟體實際操作解答問題，以增進學生專題討論的問題解決能力。

**642030 Applied Statistics** 2 R

The course content includes basic descriptive statistics and Inferential Statistics, especially focuses on processing ability utilizing software of Excel and SPSS. Some of these topics may be combined students' academic studies, for improving students' processing abilities.

**642031 實務專題(2)** 2 必

本課程之主要目標在協助學生完成專題研究及其他應具備之知能

**642031 Special Projects(2)** 2 **R**

The purpose of this course is to provide the necessary knowledge regarding individual projects, in addition, to provide comprehensive skills of this field.

**642032 休閒活動規劃與設計** 2 必

本課程之目的在介紹各種不同生命週期休閒活動需求輔以活動規劃原則，並教導學生具備

針對不同族群休閒活動規劃與設計之實務能力。

**642032 Curriculum and Activities Design for Recreational Sport** 2 R

The object of this course introduces the requirements of every kind of activity and program principles to offer students with ability of recreational program and design to different needs.

## 二、選修科目 Elective Courses

**642033 運動與健康專業英語　　2　選**

本課程之目的在介紹幼兒體能基本動作能力之發展等相關理論，並配合遊戲理論使學生具備幼兒體能遊戲課程設計之能力。

**642033　English of Sport　　2　E**

The purpose of this course is to help students improve the English abilities related to sports, exercise, and leisure activity in order to promote the reputation in the international market.

**642034 運動知能與賞析　　2　選**

本課程之目的，在於透過欣賞體育運動活動過程中，教導學生應俱備之體育運動相關知識，例如活動啟源，競賽規則，裁判法。不僅可從中獲得專業上之輔助，更可拓展國際視野，了解國際趨勢。

**642034　Sport Relish　　2　E**

The purpose of this course is to help student to have the understanding and knowledge of sports and exercise through the sport relish, including the history, game and referee rules. It not only help student get the assistance on specialty, but also extend student's view to the broad world.

**642035 攀岩運動與指導　　2　選**

本課程目的在培養學生運動攀岩基本技能。攀岩安全求則、設備操作使用、攀登及確保的正確觀念，最後學習運動攀岩個別指導、教學、攀岩活動設計及規劃之能力。

**642035　Coaching of Sport Climbing　　2　E**

The key purpose of this course is to cultivate students' basic sports climbing skills, safety concepts, equipment using, climbing and belay techniques to have competence of guidance, teaching, design and planning of sports climbing activities.

**642036 休閒經濟學　　2　選**

休閒產業已成為當代社會的重要產業，本課程經由經濟學的角度來探討休閒產業對當代社會的重要性與影響力。

**642036　Economy of Leisure　　2　E**

Leisure industries have become the important industry in contemporary society. This course is through the prospect of economy to explore the importance and influence of leisure in contemporary society.

**642037 生態旅遊　　2　選**

生態旅遊是兼顧生態保育、地方社區與旅遊發展的新興遊憩活動。本課程探討生態旅遊的各個層面，期能培養學生正確生態旅遊的概念。

**642037　Ecology Traveling　　2　E**

Ecotourism is a new recreational activity that includes ecology, environment protection, community, and tourism. The aim of this course is to introduce the coverage of ecotourism as to cultivate convenient conceptions of ecotourism for students.

**642038 運動體能訓練　　2　選**

本課程介紹運動訓練學的各項理論，及運動競賽時應用的時機。除了理論的介紹外，也研

讀近年有關運動訓練的研究。期能將理論與實務結合，於未來提升運動員的成績。

**642037 Sports Conditioning Training 2 E**

The purpose of this subject is to introduce training theories and when and how to use these theories. In addition to the introduction of training theories, graduate students are instructed to research the latest reports and studies. We hope that a combination of theories and practice can promote athletes' performance in the future.

**642039 徒手肌肉功能測試 2選**

本課程旨在使學生瞭解人體各關節骨骼肌的結構、起終點、神經支配及其執行的動作，並應用檢查必用的評估工具－徒手肌肉測試，提供臨床運動防護師一套完整的測試方法。

**642039 Manual muscle testing and function 2 E**

The purpose of this course is to introduce various musculoskeletal structure and function of the joint in the body which include the origin and insertion、innervation and its function。Throughout the application of evaluation and assessment tool－manual muscle testing, we provide clinical athletic trainers with thorough techniques of manual examination。

**642040 運動醫學概論 2 選**

本課程之目的在教導學生建立正確的運動醫學概念。其內容包括健康管理、運動員與疾病、急救措施、運動與藥物、運動障礙、運動與貼紮術・・等。

**642040 Introduction of Sport Medicine 2 E**

The purpose of this course is to introduce the basic concept of sports medicine. The contents include health management, athletics and diseases, first aid, sports and medicine, sports obstacles, sports and wrapping and soon.

**642041 有氧舞蹈運動與指導 2選**

有氧舞蹈以有趣的方式強化體適能。有氧舞蹈配合特定音樂，內容主要分為燃燒脂肪、肌肉雕塑以及伸展的部分。有氧舞蹈類型有高低衝擊有氧、階梯有氧和水中有氧。本課程之目的在透過有氧舞蹈運動之教學與練習，讓學生學習有氧舞蹈之基本技能及指導方式。

**642041 Aerobic Dance Exercise and Coaching 2 E**

Aerobic Dance is a fun way to get fit. It combines fat-burning aerobic movements, muscle-building exercise, and stretching into that are performed to music. Aerobic dance can be classified into high-impact exercises, low-impact, step aerobics and water dance aerobics. The purpose of this course is to teach skill of aerobic dance, in addition, to cultivate learners' guide ability in aerobic dance is also emphasized in this course.

**642042 體適能活動與指導 2 選**

本課程之目的在透過實作教學，讓學生了解身體活動的感受，並學習體適能之五大要素：肌力、肌耐力、柔軟度、心肺功能、身體組成。由實作之過程中，發展本身之體適能及創造出各種模式之體適能活動，以增進其課程設計及運動指導之能力。

**642042 Physical Fitness and Coaching 2 E**

The purpose of this course is to offer the theoretical background of body movement, which included the five elements of physical fitness: muscle endurance, cardio respiratory function, and body composition. During the practical process, students will develop and create various models of physical fitness to increase the ability of curriculum design and sports guidance.

**642043 羽球運動與指導　　2　選**

本課程主要目的在培養羽球基本動作、綜合應用技術、裁判規則及指導能力。授課內容包括：基本動作學習、單、雙打簡易比賽方法、綜合應用技術、比賽技術結構、戰術與戰略之應用、個別指導、教學、訓練及比賽之能力。

**642043　Coaching of Badminton　　2　E**

The object of this course is to cultivate students to possess the base skills, synthesize skills, judgment and instruction ability of badminton. The contents of this course include base skills, singles game, double game, synthesize skills, tactics, strategy, individual instruction, teaching, training and competition technology.

**642044 進階攀岩運動與指導　　2 選**

本課程主要目的在深化學生有關攀岩運動與指導之實作經驗與能力並能取得相關專業證照。課程內容包括：CB 檢測教學、強化人工岩場攀登能力、天然岩場攀登、岩場經營實務，藉以提昇攀岩運動指導與營運能力。

**642044　Advanced Coaching of Sport Climbing　　2 E**

Course this main purpose to deepen student make experience and ability and can make relevant certificates in fact about sport-climbing between sport and guide. The course content includes: CB test, strengthens the artificial rock field to climb ability, natural rock field and is climbed, manages the practice in the rock playground, use to promote sport-climbing and move and guide with operation ability.

**642045 休閒人力資源管理　　2　選**

本課程之目的使學生瞭解休閒運動專業人員應如何加以對組織中的人力資源建立合宜的管理機制，促進休閒運動組織的效益。

**642045　Human Resource Management of Leisure　　2 E**

The purpose of this course is to introduce the theoretical concepts of human resource and the rollover-system. In addition, apply these concepts into sports and exercise circumstance will be emphasized in this course.

**642046 領隊與導遊實務　　2　選**

此課程將會授與學生領隊與導遊實務方面的技巧與觀念，重要的是將來從事此一行業的正確工作態度與服務的精神，從而認清領隊與導遊的工作真相，以便及早調整自己的就業方向。

**642046　Practice of Leadership and Guidance　　2　E**

The course will introduce the conceptions and skills of leadership and guidance for students as to understand the working connotation of leadership and guidance. It also cultivates students to have the convenient attitude of service to looking for a good job.

**642047 旅運經營學　　2　選**

旅行業業務已經進入全民觀光的時代，然旅行業的經營與管理卻存在潛在性問題。產品無形、資訊不對稱、旅遊糾紛頻傳、員工流動率高、資訊科技衝擊、顧客關係管理等諸多問題。唯掌握社會趨勢與消費需求變化，提升內部作業與管理效率，才能創造競爭力。本課程融合理論與實務，針對各項問題與挑戰進行探討與分析。

**642047　Travel Industry Management　　2　E**

It's been a full scale era for travel agent business, yet, still facing numerous potential problems

toward practicing and management, name a few, product intangibility, information asymmetry, tourist dispute, high employee turn over rate, IT impact and customer relation management, and so forth. By catching society trend and consumer need variation, advancing internal operation and management efficiency can travel agent practitioners initiate their competition. The course is analyzing and probing into problems by blending theory and practition accordingly.

**642048 餐飲服務技術及實習　　3　選**

1.本課程以餐飲服務之服務品質與顧客滿意度為基礎,主要目的希望能為學生們找出對服務的熱忱。

2.瞭解餐飲的組織與職責及準備作業；包括營業前後的準備、餐具佈置、餐飲服務技術。

3.有了餐飲服務技術概念和操作基礎，讓同學從分組討論、練習，尋求合作的默契與分享，更學習到互相專重彼此創意的美德。

**642048　The Skill of Restaurant Service and Practice　　3　E**

1.To enhance the quality of restaurant service and customer satisfaction. We hope we can help students to find the service enthusiasm.

2.To understand correct preparation procedures, including preparations before and after business time, utensil arrangement and service skills.

3.To learn respecting others' creativity by means of groups discussion, practice and cooperation.

**642049 營養學概論　　2　選**

本課程之目的，在於教導學生營養學之基礎概論，期使學生俱備營養學的概念，以作為日後相關應用性學科，例如運動營養或體重控制等課程之預備課程。

**642049　Basic Nutrition　　2　E　　.**

The purpose of this course is to teach student the basic knowledge of nutrition and help students have the understanding and knowledge of nutrition. The basic knowledge will be used in the future applied subjects like sports nutrition and weight control, etc.

**642050 運動推廣概論　　2　選**

本課程主要在教導運動教育推廣之理念與實務作為，並從專案設計、實際介入等型式，以培養學生團隊合作並實際運作的能力。

**642050　Introductions of Promotion Strategies for Exercise　　2 E**

The purposes of this course are 1. to provide the whole concept of exercise and health education, and 2. to establish the practical skills on exercise strategies.

**642051 社區健康營造　　2　選**

本課程主要在建構學生對世界衛生組織對健康營造的基本概念，並教導學生在社區健康營造上專業知識與技能。

**642051　Community Health Building　　2　E**

Through the process of reading, presentation, discussion and sharing, students will familiarize the theories and skills related to community health building. The purpose of this course is to provide the whole concept of community health building under the structure of World Health Origination, additionally, to provide the opportunity for practical training on related domains..

**642052 健康管理　　2　選**

本課程之目的在透過文獻導讀方式，讓學生了解健康促進以及疾病預防之關鍵影響因素，且透過文獻之蒐集與分析，歸納出動態生活及靜態生活與健康促進及疾病預防之間的相關性。透過本課程，期能培養學生對於健康生活形態之認同，並建立一套正確且有效的指導模式。

**642052　Health Promotion and Disease Prevention　　2 E**

The purpose of this course is to guide students how to read the literature reviews, by doing so, students can get more awareness how to promote healthy and prevent diseases. Through collecting and analyzing the literature review, students can sum up the life style between development and static state, finally to discuss the relationship between promoting healthy and preventing diseases.

**642053 運動傷害評估學　　2　選**

本課程之目的在教導運動傷害評估之基礎理論，並培養學生面臨運動傷害事件發生時，對傷者患部傷害程度及急救處理原則之判斷能力。

**642053　Recognition & Evaluation of Athletic Injury　　2 E**

The purpose of this course is to introduce the basic theory of sports injury and how to evaluate the sports injury in sports circumstance.

**642054 肌能系貼紮應用　　2　選**

本課程目的在介紹一般常見的身體問題，以及肌能系貼紮之應用，例如：腕隧道症候群、五十肩、網球肘、下背痛、抽筋、水腫、暈車、氣喘、月經痛等的問題。本課程中將討論這些健康問題可能原因、機制與軟組織貼紮改善之方法，幫助學生建立解決這些健康問題的正確觀念與方法。

**642054　Applications of Kinesio Tape　　2　E**

The goal of this course is to introduce the common health problems and the implication of kinesio tape, for example: carpal tunnel syndrome, frozen shoulder, tennis elbow, low back pain, muscle cramp, edema, motion sickness, asthma, and dysmenorrhea (pain on menses) and etc. The possible reasons, mechanism and the implication of kinesio tape will be introduced, and discussed. This class will help students develop correct opinions and methods for solving health problems.

**642055 運動傷害防護學與實驗(1)　　2　選**

本課程之目的在培養學生正確的運動傷害防護之概念，並訓練熟練正確之運動傷害防護實作技術應用於職場上，內容包括運動傷害病理學及上肢各關節部位之介紹。

**642055　Principle and Practice in Athletic Training (1)　　2 E**

The purpose of this course is to introduce the theoretical background of Sports Injury Prevention, in addition, application of the comprehensive concept into the practical circumstance is also emphasised . The content includes mechanisms and characteristics of musculoskeletal and nerve trauma, tissue response to injury and introduction of various joints in the upper extremity.

**642056 進階羽球運動與指導　　2　選**

本課程主要目的在培養學生進階之羽球動作、綜合應用技術、裁判規則及指導能力。授課內容包括：進階動作學習、單、雙打比賽戰術與戰略之應用、個別指導、教學、訓練及比賽之能力。

**642056　Advanced Coaching of Badminton　　2　E**

Purpose of this course is to cultivate students to possess the advanced skills, synthesize skills, judgment and instruction ability of badminton. The contents of this course include advanced skills, singles game, double game, synthesize skills, tactics, strategy, individual instruction, teaching, training and competitive skills.

**642057 桌球運動與指導　　2　選**

本課程的目的在使學生了解桌球運動的歷史、發展、規則技術與未來發展的趨勢。

**642057 Coaching of Table Tennis　　2　E**

The purpose of this course is to introduce the comprehensive concept and skill of table tennis, in addition, to cultivate learners' guide ability in table tennis is also emphasized in this course.

**642058 繩索挑戰安全操作　　2　選**

本課程主要目的在培養學生繩索挑戰安全操作能力，透過基本知識與技能介紹，加上課堂上實際操作，讓學生能夠獲得初級繩索挑戰安全操作能力，進而進行活動指導。

**642058 Safety Practice for Challenge Courses　2　E**

The purpose of this course is to develop students' competence for safety practice for challenge ropes courses through the introduction of basic knowledge and skills as well as the actual practice in class to obtain the competence for basic instruction.

**642059 休閒運動與法規　　2　選**

本課程主要目的在培養休閒及運動產業從業人員之正確法律觀念。授課內容包括：我國司法制度介紹、我國六法與運動之相關內容，從業人員可能涉及民事責任、刑事責任、行政責任、侵權行為、故意與過失、契約法律、司法案例。

**642059 Recreation Sport and Laws　　2　E**

The purpose of this course is to cultivate students to possess correct concepts of legislation in recreation sports industry.　The contents of this course include the legal system, Six Law of our country, and that the responsibility for civic law, criminal law, administration, tort, deliberately indiscretion, contract and case of the practician in recreation sport field.

**642060 戶外冒險教育　　2　選**

本課程主要目的在培養學生戶外冒險教育活動指導能力，透過冒險教育理論與指導方式的介紹，學習戶外冒險教育的基本知識與相關技能。

**642060 Outdoor Adventure Education　　2　E**

The purpose of this course is to train students to practice instruction in outdoor adventure education through the introduction of theory and practice as well as the integration of knowledge of skill.

**642061 遊程設計　　2　選**

本課程主要針對旅行社的套裝行程來設計天數不等的遊程，以滿足旅客的不同需求，並作成本分析以收合理的利潤。

**642061 Package Tours Management　　2　E**

The curriculum focuses on designing different package tours for traveling agents to appease tourist needs, and analyzes the costs to get the advisable interest.

**642062 休閒行為　　2　選**

本課程主要從哲學觀點來分析人類休閒行為，希望培養學生對此領域的基本知能。

**642062 Leisure Behavior 2 E**

The aim of this course is through the views of philosophy to analyze leisure behaviors of human, and hope to cultivate students' knowledge and abilities in this field.

**642063 營隊籌辦與管理 2 選**

本課程主要目的在建立學生對於營隊籌辦與管理的能力，透過理論與實務的介紹，讓學生融合課堂所學知識與技能，實際參與營隊規劃、操作與管理。

**642063 Organization and Management for Camps 2 E**

The purpose of this course is to develop students' competence for organizing and managing camps through the introduction of theory and practice as well as the integration of knowledge of skill. Also, students are required to actually participate in planning, practicing and managing for camps.

**642064 野外求生 2 選**

本課程主要目的在建立學生對於野外求生的能力，透過理論與實務的介紹，讓學生融合課堂所學知識與技能，實際應用於戶外活動指導的操作當中。

**642064 Outdoor Survival 2 E**

The purpose of this course is to develop students' competence for outdoor survival through the introduction of theory and practice as well as the integration of knowledge of skill.

**642065 客房管理與實習 3 選**

每一位旅客都希望從一進飯店開始到其離開飯店，有備受歡迎的感覺，真正體驗到「賓至如歸」式的接待。旅客的再度光臨有賴旅館氣氛的營造，即由客房的整潔、餐飲的品質及員工們的服務態度等因素，來決定對於飯店的評價。

稱職房務員應具備之任務:

(一)從事飯店客房的整潔工作，以備旅客住宿。

(二)依照正確的步驟，操作清潔用具和材料，更換床單，打掃客房內浴室，以維持客房清潔衛生。

(三)學習工作技能，迅速檢查客房，使各種佈置、清潔工作全部完成，確實提供新遷入的旅客住用。

體認清潔、親切、舒適、安靜及旅客安全之共同目標。

**642065 House keep and practice 3 E**

Guest satisfaction is the first priority in hotel service. The re-visit of guest depends on room clean, food quality and employers attitude.

As a result, the jobs of houses keepers are as follows:

1.To complete room clean for guest.

2.To maintain room clean according to correct steps, such as change sheet, room bathroom.

3.To learn job required skills: check room quickly and correctly.

4.the common goal of satisfying guest: clean, kindness, comfort tranquility and security

**642066 健康飲食行為 2 選**

本課程之目的在於教導學生健康飲食行為觀念，及以健康飲食行為對於人體的影響性。例如飲食習慣、烹調行為、認識加工食品等等。

**642066 Diet of Sport Behavior 2 E**

The purpose of this course is to guide students understand the basic concepts and the influence of healthy dietary behavior. For instance, the dietary habit, cooking method, processing food intake, etc will be discussed in this course.

**642067 運動治療操作學 2 必**

本課程之目的在於讓學生學習雷可運動貼紮、關節鬆動術、神經鬆動術以及本體感覺神經誘發術。此課程有助於學生學習基礎的介入與徒手治療方式。

**642067 Exercise therapy and manipulation 2 R**

The purpose of this course is to have students practice leukotape, joint mobilization, nerve mobilization, proprioception neural facilitation, and . It will help students to learn basic intervention and manual treatment.

**642068 運動傷害防護學與實驗(2) 2 選**

本課程之目的在培養學生正確的運動傷害防護之概念，並訓練熟練正確之運動傷害防護實作技術應用於職場上，內容包括頭頸部、胸腹部、脊椎與下肢各關節部位之介紹。

**642068 Principle and Practice in Athletic Training (2) 2 E**

The purpose of this course is to introduce the theoretical background of Sports Injury Prevention, in addition, application of the comprehensive concept into the practical circumstance is also emphasised . The content includes the head and neck, the thorax and abdomen, the spine and introduction of various joints in the lower extremity.

**642069 進階桌球運動與指導 2 選**

本課程之目的，在以基礎桌球課程作為根基，教導學生更純熟及高難度之桌球技巧。並透過實作過程，協助學生建立桌球教學之概念及實戰經驗。

**642069 Advanced Coaching of Table Tennis 2 E**

This course is based on the basic table tennis. The purpose of this course is to help student to learn more mature level of table tennis skill including the instructing skills and competition experience.

**642070 網球運動與指導 2 選**

本課程之目的在教導學生網球運動之基本技巧、了解和運用規則，並培養學生具備網球指導能力。

**642070 Coaching of Tennis 2 E**

The purpose of this course is to introduce the comprehensive concept and skill of tennis, in addition, to cultivate learners' guide ability in tennis is also emphasized in this course.

**642071 進階繩索挑戰安全操作 2 選**

本課程主要目的在培養學生進階繩索挑戰安全操作能力，透過進階知識與技能介紹，加上課堂上實際操作，讓學生能夠獲得進階繩索挑戰安全操作能力，進而進行活動指導。

**642071 Advanced Safety Practice for Challenge Courses 2 E**

The purpose of this course is to develop students' competence for safety practice for challenge ropes courses through the introduction of advanced knowledge and skills as well as the actual

practice in class to obtain the competence for advanced instruction.

**642072 運動與休閒社會學　　2　選**

本課程主要目的在培養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現象。授課內容包括：休閒運動社會學之意義與理論；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。

**642072　Sports Sociology　　2　E**

The object of this course provides workers who engage in recreational sports industries with basic concepts of sociology from the point 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.

**642073 休閒民宿經營與管理　　2　選**

本課程旨在介紹休閒民宿的意義、設施、相關法規、休閒民宿在世界及台灣的發展概況，以訓練學生如何當一個稱職的民宿主人。

**642073　Management of Tourist Home　　2　　E**

This curriculum introduces students the meaning, facility, related law and development situation of tourist home in the world and Taiwan. It also trains students to be a convenient manager of tourist home.

**642074 運動與休閒消費行為　　2　選**

本課程之目的在使學生正確瞭解休閒運動市場中消費者的需求，透過休閒消費者概念與定義的講授，讓學生對休閒產業與消費者有整體的宏觀觀念，學習有關休閒基本理論與消費著行為之學問，獲得生活、學習與工作的基本能力。期許除得到休閒產業之基本知識外並能實際運用在未來學習課程與日常生活實務上，同時強化了解與解決消費者與休閒產業之間的問題及運用能力。

**642074　Consumer Behavior in Sports and Exercise　　2 E**

The purpose of this course is as follow:

1. To acquaint students with the macroscopic concept of the sport and leisure industry and consumer.

2. To learn the theories of sport and leisure industry and consumer behavior.

3. Apply the knowledge to further education or practices; strengthen the ability of understanding and solving problems between the consumer and leisure industry.

**642075 運動觀光　　2　選**

本課程主要目的在培養觀光旅遊地區之運動設施服務之經營管理觀念。授課內容包括：探討運動觀光之意義、理論及範籌；運動觀光產業之特性及經營之關鍵成功因素；運動觀光產業之發展現況及運動觀光行為分析；運動觀光設施服務之整體規劃、管理、行銷規劃；運動觀光設施服務進行個案探討。

**642075　Sports Tourism　　2　E**

The object of this course is to cultivate students to posses the concept of manage regarding infrastructures of sport in relation to tourism destination. The contents of this course include the

meaning, theory, scope, characteristic, critical factor, current situation, sport tourism behavior, plan, manage, marketing and case study of infrastructures of sport in relation to tourism destination.

**642076 休閒與年老　　2　選**

本課程之主要目的是在讓學生了解老化對老人身心所產生影響，對於老人休閒活動安排、指導與管理時應注意的事項，進而時老人能在充分的準備下獲得保健的運動休閒技能。

**642076　Leisure and Aging　　2　E**

The purpose of this course to introduce the effects of ageing to the old, know the principles of recreational activities, guidance, management in order to help the old to obtain recreational sports skills under well prepared coaching.

**642077 國際禮儀與實務　　3　選**

許多人都認為禮儀等有需要的時候才來學就好了，其實不然，每天只要接觸人群就有禮儀來約束行為規範。

歐美日本等國家從小就培養幼童尊重別人，要讓禮儀（食、衣、住、行、育、樂）融入日常生活中，才能穫得很好的友誼及開拓自己的人際關係，所以文明國家，社會層次愈高者愈有禮貌，所謂「樹木不經日曬雨淋不長高，人格未經千錘百鍊不健全」，大家應該學習稻穗精神，愈飽滿腰身彎的愈低，才能穫得別人的敬重。

人與人相處的關鍵，幾乎都是在生活小細節的關照與彼此的尊重，所以「對上要敬；對下要慈；對人要和」有一句話說「願要大，志要堅，氣要柔，心要細」是詮釋做人處世要退一步海闊天空。

禮儀教育絕對不是上流社會的附屬品，它是全民教育。

**642077　International manners and practice　　3　E**

In western countries, good manners are taught from childhood. They can obtain long friendship and broaden relationship from respecting others. As a result, the higher the social statue of people, the more polite they are. People should learn from the spirit of modesty. To respect and care each other is a key point among people. Manners education is a whole people education, not an accessory in higher society levels.

**642078 運動復健學　　2　選**

本課程旨在提供運動理療師一套與運動傷害復健相關內容的設計、執行及監督之完整指導課程。課程內容包括骨骼肌肉傷害之復原過程及生理病理學、運動醫學上之復健目標設立，維持及改善柔軟度、肌力及肌耐力訓練、等速肌力訓練、藥球在復健上的應用、閉鎖式復健運動、心肺耐力的維持、本體感覺、關節感知及神經肌肉控制的建立、關節鬆動術及牽引的復健應用、本體感覺神經肌肉促進術、功能式之漸進訓練以及身體關節各部位之復健。

**642078　Rehabilitation Techniques in Sport Medicine　　2 E**

The purpose of this course is to provide the sports therapist with a comprehensive guide to the design, implementation and supervision of rehabilitation programs for sport-related injuries. The content includes the healing process and the pathophysiology of musculoskeletal injury, rehabilitation goals in sports medicine, maintaining and improving flexibility, muscular strength and endurance, isokinetics in rehabilitaion, plyometric exercise in rehabilitation, closed-kinetic chain exercise, maintenance of cardiorespiratory endurance, reestablishing proprioception、kinesthesia、 joint position sense and neuromuscular control in rehabilitation, mobilization and traction techniques in rehabilitation, proprioceptive neuromuscular facilitation techniques,

functional progression in rehabilitation, and rehabilitation of human related joints

**642079 運動貼紮與實驗　　2　選**

本課程之目的在介紹貼紮之基本理論，並教導學生具備運動傷害防護之貼紮技巧。

**642079　Strap/Bandaging Techniques in Athletic Training　　2 E**

The main purpose of this course is to introduce the theory of sports/exercise tapping and relative knowledge. The practical skills will be emphasized during this section.

**642080 銀髮族體適能保健與實務　　2　選**

本課程之主要目的是在讓學生了解老化對老人身心所產生影響，對於老人休閒活動安排、指導與管理時應注意的事項，進而時老人能在充分的準備下獲得保健的運動休閒技能。

**642080　Elderly Physical Fitness and Health Promotion　　2 E**

The purpose of this course to teach students to realize the effects of ageing to the old, know the principles of recreational activities, guidance, management in order to help the old to obtain recreational sports skills under well prepared coaching.

**642081 水域運動　　2　選**

本課程之目的在教導學生學習水域運動（如衝浪、浮潛、潛水、水上摩托車、IRB 與動力小船等）之實際操作技術，以及各種水域運動合適之自然條件（如氣象與水文資料）與知識，作為日後從事水域運動產業之基本就業能力。

**642081　Water Sport　　2　E**

The purpose of this course is to introduce the comprehensive concept and skill of water-sports, in addition, to cultivate learners' guide ability in water-sports is also emphasized in this course.

**642082 運動技術教材教法　　2　選**

本系指導效率是整合運動技術教材在理論之質和量實際情況中，體育教師，教練，訓練員在思維上應當教什麼給學習者，運動技術是什麼、什麼運動技術是最好、什麼運動技術是錯的，依據什麼原理是辨別、錯的動作如何改正、使得運動員信任，獲得有效的結果，等等問題都是運動技術教材面臨的基本因素，都要經過適當的分析，才能圓滿解決，達到學習的效果。

**642082　Teaching Methods and Materials　　2　E**
**in Physical Education**

The purpose of this course is to let students know how to be a good instructor in P.E. Especially, students taken this course will lean the correct PE. skills, how to correct a wrong posture, and the fundamental principles in P.E.. In this way, students will be equipped with the knowledge about how to be a good instructor in P.E.

**642083 墊上核心運動與指導　　2　選**

墊上核心運動與指導課程，融合了瑜珈、運動調節、復健、舞蹈等精髓，可提高全身肌肉的強化、柔軟度與平衡，將重點置於身體軀幹，培養身體安定的力量，以組合的方式活動身體，以求改善姿勢、調整體線、增進健康，而且適用於各種體能水準的學生。

**642083　Mat Science　　2　E**

Mat Science is a program that includes a progressive series of exercises that accommodate all fitness levels to increase strength, flexibility and balance of the entire body. The Mat Science exercises are derived from classic disciplines such as yoga, dance and sports rehab conditioning.

The focus of Mat Science is on mindful movement, core stabilization technique and unified body movements.

**642084 單車運動與指導　　2　選**

教會孩子兩件事：

一. 節能、減碳護地球。

二. 健康、養生 LOHAS。

**642084　Instruction in Cycle Sports　　2　E**

Students taken this course will learn two things: (1) save energy and protect the earth; (2) keep healthy and maintain LOHAS.

**642085 鐵人三項運動與指導　　2　選**

鐵人三項是由三個傳統運動項目合組而成的綜合運動項目。當中包括游泳、單車及跑步。從事三項全能的運動員必須往往擁有完美的體形和身體素質，因為三項運動都是耐力運動，而所有的三項全能訓練都是有氧運動。鐵人三項運動必須在游泳、單車及跑步三項運動間，完成成功的運動型式轉換。本課程之目的，在於教導學生如何調配體能，教導游泳、自行車、跑步的進階技術練習，提高運動的經濟性，並同時教育學生如何安排訓練計畫與記錄訓練日誌，並至少完成一項鐵人三項比賽。

**642085　Triathlon Training and Instruction　2　E**

Triathlon is a multiple-stage competition involving the completion of three continuous and sequential endurance disciplines. Triathlon involves swimming, cycling, and running in immediate succession over various distances. Triathletes compete for fastest overall course completion time, including timed "transitions" between the individual swim, cycle, and run components. The purposes of this course include coaching students to build up their physical fitness, and improve swim, cycling and running skill. Training schedule and diary will be included in the class. At final stage, students have to finish a triathlon competition at least.

**642086 進階水上活動與安全指導　　2　選**

本課程主要目的在深化學生有關水上活動與安全指導之實作經驗與能力並能取得相關專業證照。課程內容包括：水上救生、浮潛、水肺潛水、衝浪、海洋獨木舟、風浪板活動與指導，以提升學生水上活動技指導能與安全維護能力。

**642086　Advanced Coaching of Water-Based Sport and Safety 2　E**

Course this main purpose to deepen student make experience and ability and can make relevant certificates about water activity and whom security instruct in fact. The course content includes: water lifesaving, skin-dive, dive, surfs, marine dugout canoe, stormy waves board activity and guidance, it can be with safeguarding ability safely to guide in order to improve student's water activity skill.

**642087 山域運動與指導　　2　選**

登山為我國國民最主要之休閒活動，因而本課程之主要目的在於給予學生登山之基本知識與技能,以期將來可以帶隊爬山與了解其應用，開拓登山休閒市場，並利用學校附近之優良登山環境，以達到與其他類似科系學生有所不同之處,增進將來進入就業市場之競爭力.

**642087　Mountaineering　　2　E**

Mountain climbing is the most popular outdoor recreation activity in Taiwan. The purpose of this course is to make students gain the knowledge and skills of mountaineering, through the use of

the abundant mountain resources around the campus. After gaining the knowledge and skills, students should be able to be leaders and guides for mountain climbing and also be more competitive for their future career.

**642088 服務管理　　2　選**

本課程主要目的在探討休閒運動產業服務管理基本概念與實務。授課內容包括：服務業的地位與重要性、服務品質與顧客認知價值、關係管理與顧客忠誠度、顧客體驗與感動、服務人員與內部行銷、服務過程與供需管理、發展整體服務行銷策略。

**642088　Service Management　　2　E**

This main purpose of course is to probe into the leisure and sport industry and serve and manage basic conception and practice. The lessons content includes: Position and importance of the service trade, serve quality and customer's cognitive value, concern between management and customer loyalty, customer experience with emotion, attendants, inside marketing, serve course and supply and demand manage, is it serve tactics of on marketing streigtics.

**642089 水域遊憩管理　　2　選**

本課程主要目的是透過對現有國內外水域遊憩產業的相關政策與發展現況為基礎，結合國際上水域遊憩管理相關理論與實務，期許學生獲得符合未來水域遊憩管理趨勢的管理者。

**642089　Water Recreation Management　2　E**

The main purpose of this course is through the existing domestic water recreation industry related policies and development status, combined with the international water recreation management-related theory and practice, students are expected to get to meet future water recreation management trends manager.

**642090 運動傷害防護儀器之運用　　2　選**

本課程目的在於教導學生正確的運動治療的方法與概念，並透過實習課程之實作演練，讓學生了解急性運動傷害之治療，慢性運動傷害之治療，傷後復健治療，治療期運動處方之開立・・等等・

**642090　Athletic Training Principles for Therapeutic Modalities　　2　E**

The purpose of this course is to introduce the theoretical concepts on exercise therapy and practice. The topics of this course include sports massage, binding, and the secure appliance before exercise.

**642091 運動保健之經營與管理　　2　選**

本課程的主要目的是提供給運動傷害防護師各種行政知識與管理技巧的一套標準模式。課程內容包含管理的理論基礎、工作計畫表的管理、人際資源的管理、經費來源的管理、設施的設計與計畫、保健資料的處理等。

**642091　Management Strategies in Athletic Training　　2 E**

The primary purpose of the course is to provide a standard mode for the kinds of administrative knowledge and managerial skills that every athletic trainer should master. The content of this course includes the theoretical basis of management, program management, human resource management, financial resource management, facility design and planning, information management and soon.

**642092 運動生物力學　　2　選**

本課程目的在於介紹運動生物力學方法的基礎觀念與理論，以及蒐集、分析、解讀運動生物力學資訊所需的方法，包括：分析骨骼肌肉系統運作所需的力學知識、運動生物力學量測原理、現代運動生物力學量測方法、以及運動生物力學對神經肌肉疾患治療之應用。此外，課程亦從輔具及足部疾病的觀點探討輔具的運動生物力學，同時探討常用評估動作的運動生物力學，因此對於綜合健康領域的大學生而言，可幫助他們增進基礎與實作方面的運動生物力學知識。

**642092 Biomechanics 2 E**

The goal of this course is to introduce the basic concept and theory of biomechanics, as well as the method to collect, analyze and interpret kinetic and kinematic information. This course include the knowledge of mechanics, kinetics, kinematics, and the implication of biomechanics to neuromuscular disease. In addition, the implication to technologically assistive device and foot disease are also introduced. This class will help students develop basic and practical knowledge of biomechanics.

**642093 進階銀髮族體適能保健與實務 2 選**

本課程之主要目的是在讓學生了解老化對老人身心所產生影響，對於老人休閒活動安排、指導與管理時應注意的事項，進而時老人能在充分的準備下獲得保健的運動休閒技能。

**642093 Advanced Elderly Physical Fitness and Health Promotion 2 E**

The purpose of this course to teach students to realize the effects of ageing to the old, know the principles of recreational activities, guidance, management in order to help the old to obtain recreational sports skills under well prepared coaching.

**642094 進階墊上核心運動與指導 2 選**

進階墊上核心運動與指導課程，以瑜珈、運動調節、復健、舞蹈等精髓，可提高全身肌肉的強化、柔軟度與平衡，將重點置於身體軀幹，培養身體安定的力量，以組合的方式活動身體，以求改善姿勢、調整體線、增進健康，而且適用於各種體能水準的學生。並將輔導學生增進運動指導能力與相關証照考取。

**642094 Advance Mat Science 2 E**

Mat Science is a program that includes a progressive series of exercises that accommodate all fitness levels to increase strength, flexibility and balance of the entire body. The Mat Science exercises are derived from classic disciplines such as yoga, dance and sports rehab conditioning. The focus of Mat Science is on mindful movement, core stabilization technique and unified body movements. Furthermore, this advance program will improve student’s instructing abilities and assist student in related license qualified.

**642095 海洋觀光 2 選**

本課程主要目的是希望學生透過本課程瞭解到海洋觀光的範疇、歷史發展、海洋生態與觀光、產業現況、海洋觀光衝擊、海岸管理等多重角度瞭解海洋觀光發展課題，藉以啟發對於海洋觀光管理的實用知能。

**642095 Marine Tourism 2 E**

The main purpose of this course is for students to learn through this course the scope of marine tourism, historical development, marine ecology and tourism, industry status, the impact of marine tourism, coastal management, multi-perspective understanding of the marine tourism development issues in order to inspire the marine tourism management practical knowledge and ability.

**642096 戶外遊憩領導　　2　選**

本課程主要目的在培養學生戶外遊憩活動的領導與引導能力，透過領導與引導理論的介紹，學習戶外遊憩活動的進階知識與技能，並實際參與戶外遊憩活動的帶領。

**642096　Leadership for Outdoor Recreation　　2　E**

The purpose of this course is to train students to practice advanced leadership and facilitation in outdoor recreation activities through the introduction of theory and practice as well as the integration of knowledge of skill. Also, students are required to actually participate in leadership for outdoor recreation activities.

**642097 休閒事業行銷研究　　2　選**

本課程主要目的在教導學生，如何利用行銷研究的技術來蒐集和分析所需的各種資訊，以應付行銷決策上的需要。由於企業競環境的詭譎多變，使得行銷策略擬定與執行，變得非常複雜，本課程設計的宗旨，即在讓學生將其行銷管理課程上所學習之行銷觀念與技巧，能在一頗為真實的行案上作一實際演練。

**642097　Marketing Research for Leisure Industry　　2 E**

The objective of this course is designed to teach the students how to use the technology of marketing research to collect and analyze the meeded information for the purpose of marketing decision-making. Marketing research can serve as the means by which students can better understand the complexity of the marketing system and the decisions required by those managers responsible for formulating marketing strategies and programs. As that, the purpose of this course is to provide for the students with the opportunity to apply their knowledge of marketing concepts and tools to a variety of real marketing problems.

**642098 共通核心職能課程　　2　選**

本課程主要目的在提供學生與職場有關之核心職能相關理論與技巧，以達縮短學用落差之課程目標。

**642098　Introduction of Job Capability　2　E**

The purpose of this course is to provide the general concept of job capability, especially for the students of the Department of Recreation Sport and Health Promotion. Meanwhile, this course is opened just when the Career-Project is approved.

**642099 運動科學文獻導讀　　2　選**

本課程提供學生有關過去與現今運動科學的研究報告，運動科學包括運動生理學、運動生物力學與運動心理學等。學生回顧過去有關運動科學重要研究並瞭解目前有關運動科學最先進的資訊。這將幫助學生建立基本運動科學的學術思想。

**642099　The Introduction to Sport Science Papers　　2 E**

This course is to provide the past and the latest important researches about sport science, including exercise physiology, sport biomechanics, and sport psychology, and so on. This course makes students review the past important studies and understand state-of-the-art information about his field. This will help students develop basic academic thought in sport science.

**642100 運動推拿指壓學　　2　選**

此課程目的在使學生瞭解推拿指導之基本理論，並使其具備應用於運動之相關能力。

**642100　Sports/Exercise Massage and Practice　　2　E**

The purpose of this course is to introduce the basic concepts and skills of massage to relax the

muscle. In addition, students are expected to build the advantages on sports massage after taking this course.

**642101 運動防護實習(1)　　2　選**

本課程之目的在於使學生將大學課堂所習得的運動傷害防護知識及技術，實際應用於臨床實務上。學生將透過運動傷害防護室的參與及校隊跟隊的方式完成此課程，有助於學生成為一位獨當一面的運動傷害防護師。

**642101　Practicum in athletic training (1)　　2　E**

The purpose of this course provide students with knowledge and techniques background in the athletic training to practice in clinical settings. Students will need to follow school team's activities and practice assessment,taping and strapping,and treatment skills for various cases in athletic training room throughout the course. It will aid students in obtaining the capability to be an independent athletic trainer for themselves.

**642102 人體肌動學　　2　選**

本課程之目的在教導運動生物力學之基礎概念，並將其應用於運動技術指導上。

**642102　Human Kinesology　　2　E**

The purpose of this course is to promote the basic concept of sports biomechanics; in addition, application on the instruction system with the perceptions of sports biomechanics will be emphasized during the section.

**642103 特殊族群運動指導理論與實務　　2　選**

本課程內容涵蓋的範圍為特殊族群在參與運動時應注意的事項與運動計畫的設計原則。首先必須先分析各族群的身體特性，包括生長發育與成熟度、老化現象，以了解身體需求與生理限制及探討運動參與的重要性，並進行實務指導練習，以期具備指導特殊族群運動之專業知識與指導能力。

**642103　Ercise in Special Population:from Theory to Practice　2 E**

The purposes of this course include exercise program design and sports participation notices for special population. The first step, the body characteristic and limitation for those special groups should be analyzed, including mature, aging etc. That will help students understand the physiological need and limitation for special population, and realize the importance of exercise participation. Further, students could practice exercise instructing to enhance their knowledge and abilities in this area.

**642104 樂齡運動與健康促進　　2選**

本課程主要目的係因應高齡社會與健康促進之議題，指導學生應用運動休閒相關知能於實務操作，藉以提高學生在健康照護職場之服務經驗與能力。

**642104　Aging Exercise and Health Promotion　　2　E**

Within the topic of aging society, the purpose of the class is aimed to apply the knowledge and practical skills of the recreational sports to clinical settings of aged people, in addition, to enhance students' clinical experiences for their career.

**642105 個人運動指導　　2　選**

本課程之目的在培養學生成為個指導員，並考取相關証照。課程內容包含：運動科學、教育概論、輔導的學習。其中包括下列細項：健康及生活型態、心肺持久力及運動處方、柔

軟度、抗阻訓練、肥胖、壓力管理、特殊族群等。

**642105 Personal Exercise Trainer 2 E**

The purpose of this program is to assist students to be a qualified personal exercise trainer. The curriculum includes: Anatomy and kinesiology, Fitness assessment testing procedures, Nutrition fundamentals and weight management, Special populations and medical considerations, Listening, leadership and motivational skills, Exercise programming in the weight room, and Wellness programming and screening guidelines

**642106 高爾夫球運動與指導 2 選**

本課程之目的在教導學生高爾夫球擊球基本技巧、了解和運用規則，並培養學生具備高爾夫球指導能力。

**642106 Coaching of Golf 2 E**

The purpose of this course is to introduce the comprehensive concept and skill of golf, in addition, to cultivate learners' guide ability in golf is also emphasized in this course.

**642107 瑜珈運動與指導 2 選**

本課程之目的在於教導學生習得正確的瑜珈運動的精華，並期望透過瑜珈運動，訓練學生沉思、自我控制、呼吸吐納及沉靜內省之能力，最主要之效能為學生柔軟度及肌力之訓練。

**642107 Coaching of Yoga 2 E**

The purpose of this course is to introduce the comprehensive concept and skill of Yoga, in addition, to cultivate learners' guide ability in Yoga is also emphasized in this course.

**642108 職場體驗 2 選**

本課程主要目的在指導學生適應職場、瞭解職場實務運作，並能將所學之理論與技術實際應用於相關場域，以達到增進就業力的教育目標。

**642108 The Experience of Worksite 2 E**

The purpose of this course is to provide the experience of related worksite for student in the Department of Recreation Sport and Health Promotion, to enhance their job capability. Meanwhile, this course is opened just when the Career-Project is approved.

**642109 俱樂部經營與管理 2 選**

本課程之目的在介紹休閒運動俱樂部所應具備的場地、設施、專業人員、行銷管理原則，讓學生更易掌握休閒運動俱樂部的經營管理。

**642109 Clubs Management 2 E**

This course is designed to explore the appropriate location for recreational sports, to use the facilities, to management those professional workers on recreation sports clubs. Students are expected to realize how to manage recreational sports clubs after taking this course.

**642110 旅遊電子商務 2 選**

這個課程主要於觀光產業中介紹電子商務的基本理論與與實務應用。主題包括: 電子商務概論、電子商務策略、入口網站、網上拍賣、建構電子商務平台、個案探討。

**642110 E-commerce on tourism 2 E**

This course introduces the basic theory and practice of E-commerce in tourism industry. The topics include：the introduction of EC、the strategy of EC、portal website、auction、construct the

platform、case study。

**642111 冒險觀光 (英文授課)　　2　選**

本課程旨在於使學生對冒險觀光此一正蓬勃發展的市場做一全面性的了解,從該市場之需求面(例: 國內觀光客與國際觀光客)到供給面(例: 業者, 旅行社, 器材供應商, 網路, 雜誌), 以及相關環境與地方議題 (例: 自然資源與觀光景點當地居民)做一學習, 最後並對冒險觀光未來之走向與趨勢做一討論.

**642111　Adventure Tourism　　2　E**

The purpose of this course is to enable students to understand the industry of adventure tourism, which is an industry having a significant growth in the last three decades. The topics of this course include: the demand-side of adventure tourism (e.g. adventure tourists), the supply-side of adventure tourism (e.g. adventure tour operators, tour agencies, gear shops and magazines), and environmental issues of adventure tourism (e.g. natural resources and local residents). The future of adventure tourism will also be discussed as the last section of this course.

**642112 運動防護實習(2)　　2　選**

本課程之目的在於針對不同的個案進行實際的評估與治療。透過個案報告讓學生有機會針對運動選手進行評估與介入。此課程有助於學生成為一位獨當一面的運動傷害防護師。

**642112　Practicum in athletic training (1)　　2　E**

The purpose of this course is to have students practice evaluation and treatment for various cases. By case reports, students can have the opportunity to assess and intervene for athletes. It will help students to get the abilities to be an independent athlete trainer.

**642113 進階水域運動　　2　選**

本課程主要目的在培養學生不同類型水域運動操作與安全防護能力，透過基本知識與技能介紹，加上課堂與實習場所的實際演練，讓學生能夠獲得進階水域運動實際操作與安全維護能力，進而進行活動指導。

**642113　Advanced Water Sport　　2　E**

The purpose of this course is to develop students' competence for safety practice for advanced water sport courses through the introduction of basic knowledge and skills as well as the actual practice in class to obtain the competence for basic instruction.

**642114 進階高爾夫球運動與指導　　2　選**

本課程之目的在教導學生習得高爾夫球運動之進階技巧，並培養學生具備高爾夫球運動教練指導能力。此外，本課程亦協助取得高爾夫球各級相關教練裁判證照。

**642114　Advanced Coaching of Golf　　2　E**

The purpose of the course is to advance students' golf techniques and to cultivate the coaching ability in golf. In addition, the course will assist students to acquire different levels of golf judge and coach certifications.

**642115 進階瑜珈運動與指導　　2　選**

本課程之目的，在以基礎瑜珈課程作為根基，教導學生更深入及高難度之瑜珈動作。並透過實作過程，協助學生建立瑜珈教學之概念及經驗。

**642115　Advanced Coaching of Yoga　　2　E**

This course is based on the basic Yoga. The purpose of this course is to help student to learn advance level of Yoga skill including the instructing skills and teaching experience.

傳閱附件 7----國際學院土壤與水工程國際碩士學位學程 109-110 學年度課程規劃案

# 土壤與水工程國際碩士學位學程 109-110 新增課程中英文摘要

**中等水文學** 3選

本課程主要介紹中等水文學的原則和實務觀念，並學習地球上水運動和分配的原理、熟悉地表水和地下水的理論，進而學習工程設計所需之計算模擬演算工具，以期能讓學生具備解決水文學領域相關問題的能力。

**Intermediate Hydrology** 3 S

This course deals with intermediate Hydrology topics which mainly enables students to learn the principles of water movement and distribution on earth, and getting familiar with theories governing atmospheric, surface, and ground water, and then exercising hydrology on engineering design with computational tools. This course provides students with the relevant advanced knowledge required in analyzing physical problems related to Hydrology.

**颱洪災害分析與減災策略** 3選

颱洪災害為常見的自然災害之一，而颱洪災害每年均造成一定的財產損失與傷亡。因此透過災害成因分析及防救策略的運作與科技的協助，來說明如何減少颱洪災害的損失。本課程之目標為教授學生藉由颱洪災例分析，來分析探討颱洪災害成因與災害損失及減災策略研擬。學生透過課程習得防災專業技能及災害處理能力。

**Flood Disaster Analysis And Mitigation Strategies** 3 S

Flood disaster is one of many natural hazards. This brings property losses and casualties each year. In order to curb the impacts of flood disasters, disaster analysis, operational framework of disaster management and assistance of science & technology will help to identify focal issues. The course will help students analyse the occurrence causes of flood disasters, disaster losses, and strategies of flood disasters prevention and control base on case studies. Students will acquire professional skills in disaster prevention and disaster management through the course.

**土砂災害分析與減災策略** 3選

本課程主要在於學習分析土砂災害發生機制及可應用之分析工具。課程內容包含坡地崩塌、土石流及河道水砂災害等土砂災害。本課程之目標為學習(1) 土砂災害的基本理論，包括控制方程式和發生機制。(2) 土砂災害的分析工具，包括經驗方法和數值軟體。(3)進行土砂災害之案例的分析，並提出該案例之防減災策略。最後為現場之實地考察，以進一步瞭解災害現場以及減災工作之實際作為並與所提之策略進行比較。

**Large-Scale Sediment Disaster Analysis And Mitigation Strategies** 3 S

This course is mainly for students to learn the mechanism and analysis tools for large-scale sediment disaster. These include landslides, debris flow, sediment-laden flow disasters etc.. The purposes of this course are (1) describe the theory of large-scale sediment disaster including the governing equations and the occurrence mechanism. (2) apply analysis tools such as empirical and physically-based method and numerical software. (3) Analyse cases of historical large-scale sediment disaster events, and provide strategies for large-scale sediment disasters prevention and control. Finally, to compare real mitigation works in the field with theory through field trips.

**高等統計學** 3選

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：1. 機率定律 2. 基本統計概念 3. 機率分佈函數 4. 迴歸與相關分析 5. 信賴區間與假設檢定 6. 資料產生方式 7. 時間序列水文分析 8. 時間序列水文模式介紹

**Advanced Statistics** 3 S

The purpose of this course is to introduce descriptive statistics and inferential statistics. The course will also introduce statistics theory and statistical methods applied to analyse hydrological data. The major contents of the course include the basic concept of probability and statistics, probability distribution function, regression and correlation analysis, confidence intervals and hypothesis testing, uncertainty analysis, frequency analysis, analysis of hydrologic time series and stochastic hydrologic models.

**災害風險評估** 3選

本課程介紹系統觀念、優選方法與風險評估在自然災害管理之運用，使學生具有多層面的觀點與訓練，從而運用其判斷以行決策，並承擔決策施行後之責任。本課程將介紹依系統觀點對問題進行解析，分析自然災害減災與管理問題，授課主題包括以經濟或社會觀點建立問題之分析目標，引入風險評估方法，學習建立系統模型，建置評估程序與指標，透過數學的優選分析法找出最佳的解決方案，並完成風險評估。

**Risk Evaluation In Natural Disasters** 3 S

This course introduces the application of system concept, the optimization methods and risk assessment in natural disaster management. It enables students to have interdisciplinary view and training to judge and make decisions and take the responsibility of decision-making after implementation of natural disaster projects. Topics introduced include the system view on the issues of natural disaster mitigation and management, economic or social point of view to establish objective of the problem, risk and uncertainty assessment methods, learn to build a system model, evaluation procedures and indicators to find the best solutions through optimization methods and complete risk assessment.

**水文模擬分析與預測** 3選

本課程主要在於學習水文模擬原理及水文數值模擬模式，使學生學習水文資料處理及水文模式之操作與應用，並能針對所需面對的水文問題利用水文模式進行模擬、驗證，並延伸到水文預報作業。

**Hydrological System Simulation And Forecasting** 3 S

This course is mainly for students to learn the hydrological simulation theory and numerical models. The hydrological problems that need to be faced can be simulated and verified by hydrological models, and further extended to hydrological forecasting operations.

**遙測及地理資訊系統應用** 3選

遙感探測是一種快速取得大範圍地表資訊的方法，為地理資料的主要來源之一，由於近年來數位影像擷取及分析技術的進步，數位遙測影像資料結合地理資訊系統作為蒐集、整理及分析地表現象的工具已廣泛的應用於各個相關領域之中，本課程主要目的為介紹遙測與 GIS 基本原理及其在水資源及水土災害之防救災上之應用。培養學生在遙測與 GIS 之基礎知識與興趣，以利其後續進階課程之學習。

**Application Of Remote Sensing And Geographic Information System** 3 S

Remote sensing is useful in quickly obtaining large-scale surface information, which is one main source of geographic data. Recently, there has been great advances in digital image capture and analysis technology that needs to be increasingly understood. The objective of this course are; (1) to introduce the basic principles of remote sensing and GIS, and their application in water resources, and prevention and relief of soil and water related disasters. (2) Cultivate students' basic knowledge and interests in remote sensing and GIS, so as to facilitate their subsequent advanced courses.

**水資源規劃與管理** 3選

本課程主要在於學習水資源規劃管理的基本概念、原則及方法，水資源系統分析方法，水資源規劃

和管理的內容、水資源常用的管理模型、規劃模型及最佳化決策等。使學生學習利用系統科學的理論和方法分析，並研擬水資源合理開發、利用、保護和管理方案，優選最佳效益的方案。

**Water Resources Planning And Management** 3 S

This course is mainly for students to learn the basic concepts, principles and methods of water resources planning and management, the method of system analysis for water resources, contents of water resources planning and management, commonly used management models, planning models and optimization decisions for water resources etc.. Students shall learn and apply the theory of system science and analysis method to provide a rational water resources development, utilization, protection and management plan, and choo

傳閱附件 8-----108 學年度第 2 學期教師申請開授通識課程審查案中英文課程大綱

1. 「**廣告文案**」" The Advertisement Copywriting"

中、英文課程綱要：

本課程之教學內容重點在以下三方面:

1. 了解何謂廣告，以及廣告在行銷中所扮演的角色。
2. 分析評論市面上之廣告，從中學習其行銷策略。
3. 學習廣告文案之思考與製作。

Course description:

There are three main sections of this class:

1. Understanding the content of advertising and the role it plays in marketing communication.
2. Analyze and discuss on the advertising on market, to learn the marketing strategies of advertising.
3. Practice making advertising plans and copywriting.

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2.「**論語與人生**」" Life and the Analects of Confucius"

中、英文課程綱要：

學習古代經典之目的，在於透過文獻閱讀了解先賢之思想內容、思辨邏輯以及判斷依據，啟發學生閱讀經典之興趣，落實中文教學之生活化。本課程擬透過主題式的分析，從情感與道德、仁、音樂教化、禮樂之本、學習、孝順、政治、立身處世、觀人等面向逐步探索，勾勒出《論語》中所顯示的儒家思想精髓。

The purpose of studying ancient classics is to interest students in classics reading, and to connect Chinese learning and real life, by understanding the ideological content, speculative logic, and the basis of judgment through literature reading. This course intends to gradually explore "the Analects of Confucius" through thematic analysis from the aspects of emotion and morality, benevolence, music education, etiquette and music, learning, filial piety, politics, standing in the world, and observing people.

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3.「**公民參與及永續城市**」" Citizen Participation and Sustainable City"

中、英文課程綱要：

民主深化研究中指出，民主有分薄民主(thin)與厚民主(thick)治理。從民主體制在世界各地被實現後的這兩百多年來，已出現了至少三波以上的全球民主浪潮，而台灣與其他亞洲國家屬於最晚進入民主體制的第三波民主浪潮。為了要讓民主的浪潮可以前進的更穩健，避免衰退，世界各國在二十一世紀開始推動屬於厚民主的審制式民主，其中創新的機制就是擴大公民參與管道，並重視將以民為主落實在永續城市治理中。

此課程在以上學術與實務的脈絡下，期望帶領學生從認識民主深化中的厚民主理論背景談起，再結合聯合國於 2015 年制定永續發展目標(SDGs)中第 11 項（SDG 11)永

續城市（Sustainable City），探索各國地方政府與私部門如何以城市為單位，結合科學、政策及公民智慧與參與讓都市逐漸從不永續的治理、生活或生產方式逐漸轉型成永續模式，以提升人類未來對抗氣候變遷的適應能力。

課程設計分成四大部分：先從提問為何需要公民參與談起，接著介紹各種永續城市相關的國際政策工具及相關理論辯論；第三部份則開始依照聯合國永續發展目標第十一項中的永續城市七大次目標為討論課題，分別介紹各國公民參與城市創新個案；期末將規劃舉辦一場以世界咖啡館模式的永續城市與我們的共同未來公民論壇，論壇中透過桌長角色扮演、換桌與意見交換，期待修課學生可依照辯論中所反思的各種想法整合來做期末報告的公民角度政策建議白皮書撰寫，讓學生可以有學習做城市主人的模擬經驗。

In the study of democratization, democracy is divided into thin and thick governance. Since the installation of democratic institution for the past two hundred years, there are at least three waves of global democratization. Taiwan and other Asian countries are grouped as the late comers in the third wave. In order to consolidate democracy and avoid recession, countries around the world begin in the 21st century to push for deliberative democracy as one type of thick governance. Among the innovative mechanisms, to expand opportunities for citizen participation and to emphasize people centered practice in the sustainable city governance are pivotal.
This class, under the above mentioned academic and practical context, wishes to begin by introducing the theoretical concept of thick democracy. Then the SDG 11 Sustainable City proposed by the United Nations in 2015 and how local government and private sectors integrate citizen wisdom and participation to transform city from unsustainable governance, lifestyle or mode of production into sustainable path for enhancing adaptive capacity of human in flighting climate change are explored.

The course design is fourfold. By starting with understanding why we need citizen participation, the next section introduces sustainable city related international policy tools and theoretical debate. The third part uses 7 sub-goals in SDG 11 as theme to introduce citizen participation cases in different parts of the world. Lastly, toward the end of the semester, the course will utilize World Café technique to organize a citizen forum for discussing issues of sustainable city and our common future. Through table host role play, shifting table and idea exchange, participating students are expected to integrate what they have reflected into a policy recommendation white paper as final report in order to simulate the experience of acting as owner of the city.

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4.「**公民參與及永續城市**」” Citizen Participation and Sustainable City”

Course Objectives:

•To understand the origin and importance of citizen participation in democratic society.
•To explore relationship between citizen participation and sustainable city governance.
•To learn various analytical angles of citizen participation exemplified by international

cases and to expand the imagination about sustainable city.
- To experiment an alternative governance practice that is different from conventional top-down rule and learn to reclaim the city.

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5.「**國際組織**」" International Organizations"

中、英文課程綱要：

本課程旨在培育學生具備國際視野的思辨與分析能力，有系統地了解各國政府、非政府團體或甚至企業或公民如何透過國際組織一同協力解決人類所遇見的各種社會經濟、環境或永續問題。課程設計分成四大部分，先從探討為何國際上需要國際組織及如何組成國際組織的理論與實務背景談起，其次將介紹聯合國體系的運作及以議題導向的其他國際組織發展，最後綜合回顧國際組織在人類世的未來挑戰。透過此課程的規劃，期待學生可以一方面更熟悉全球治理運作，一方面也帶領學生關心更多世界各國共同會面對到的發展難題，以拓展學生未來可將專業技術與知識應用在更多國際合作計劃的可能性。

This course aims at equipping students with reflective and analytical ability from an international perspective via systematic understanding of how states, non-governmental

organizations (NGOs), corporate or citizen engage in international organizations (IOs) to collectively solve socio-economic, ecological or sustainability problems. The course is divided into four sections, starting with discussion on why IOs were needed in the international arena and how to formulate IOs theoretically or empirically. Secondly, the operation of the United Nations will be introduced, followed by other development of IOs based on thematic discussion. Lastly, a review on future challenges of IOs in the Anthropocene will conclude the course. Through the above-mentioned course design, on the one hand students are expected to be familiar with the operation of global governance; on the other hand, the course will lead students to focus on common developmental problematics faced by nations around the world in order to expand students' future capacity to apply different professional skills and knowledge into diverse international cooperation projects.

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6.「**科學新聞與媒體溝通**」” Scientific news and media communication”

中、英文課程綱要：

本課程旨在達成下列五大目標及成果：

1、使學生瞭解科學傳播源流與發展，以及科學素養之觀念與知識。

2、連結本土食品安全議題科學傳播的學理與實務。

3、培養學生辨識科普傳播作品特點與優點、敘事手法、呈現技巧與創作理念之能力。

4、探討與分析各式科學傳播媒體與形式(包括文字與寫作、影視、展館和網路與新媒體)如何應用於食安新聞科學傳播。

This course hopes to achieve the following five goals and outcomes:

1.To learn the origin and development of science communication, as well as the concept and knowledge of science literacy.

2.Put together of the theory and practice of science communication on local food safety issues.

3.To cultivate students’ ability of identifying the characteristics and merits, narrative mechanism, present skills, and creation concepts of the works of popular science.

4.Approach and analysis how to use various media and types of science communication in food safety issues.

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7.「**科學家的貢獻**」” The contribution of scientists”

Course Objectives:

The objective of this course is to introduce famous mathematicians and scientists and their great contributions. Eight mathematicians and scientists, including six men and two women are introduced in the course. Their contributions influenced the mathematics, physics, geophysics, and the modern world. By the end of this course, learners will be able to know more science knowledge from the stories of these mathematicians and scientists.