動物科學與畜產系

Department of Animal Science

一、必修科目 Required Courses

142001 動物解剖生理學 3 必 劉士謝、余祺，下

本課程以解剖學為基礎，依生理系統介紹畜禽之軀體各部位構造與功能，依次分別為骨骼、肌肉、神經、血管循環、呼吸、消化、吸收、代謝、排泄、內分泌及生殖等系統。

142001 Anatomy and physiology of Animal 3 R **S. H. Liu C. Yu, S**

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

142002 動物解剖生理學實習 1 必 劉士謝、余祺，下

本課程將利用標本及實際解剖生物來介紹軀體構造，並在實驗室以顯微鏡、檢測試劑及多項小型手術用具，透過實驗操作來進一步了解血液、心臟、循環、呼吸、泌尿及生殖之生理現象。

142002 Laboratory of the Anatomy and Physiology in Animal 1 R **S. H. Liu C. Yu, S**

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

142003 動物舍規劃與自動化 2 必 夏禮甸，上

畜舍策畫與自動化分為基本策畫所需、材料與原理、各論三部份。基本需要是根據家畜之結構環境、社會環境和氣候環境之需要而訂定；其二為材料與原理，包含隔熱、保溫、風扇、牆、各類設備等材料；各論將就豬、牛、羊、雞舍設計上所需條件、欄數、自動化與飼養管理、飼料、餵飼等之配合加以討論。

142003 Animal House Arrangement and Automation 2 R **L.C. Hsia, F**

Animal house arrangement and automation will be divided into three parts: basic requirements, material and principle, and animal house for varied species. Basic requirement is concerned the following three environments: structure environment, social

environment, and climate environment. Material and principle is discussed about the material used in animal house, and how to use the materials, i.e. insulation, heater, ventilation wall, division and etc. The house arrangement of four species of livestock and poultry will be discussed in detail. They are pig, poultry, cattle, goat, and sheep.

142004 牧場實務實習 2 必 牧場主任，上、下

本課程之目的在使學生在牧場實務實習中，將所學理論與實際配合，在操作中學習。課程內容包括，畜牧之現在及未來之展望、牧場工作簡介、養豬實習、蛋雞實習、肉雞實習、種雞實習、孵化實習、乳牛實習、牧草管理、水禽管理。

142004 Animal Farm Practice **2** **R** **Head of Livestock Farm, F , S**

The purpose of the course is to let students match the theory and practice, to reach the goal of training-learning by doing. The following items are included future and past of animal production, introduction of animal farm, practice of swine production, practice of layer production, practice of broiler production, practice of feeder production, practice of hatchery production, practice of beef cattle production, practice of dairy cattle production, management of grassland, management of dogs.

142005 生物化學 2 必 食科系，上

本課程主要提供學生對於生物體內構成物質及其生物化學作用之基本認知，以作為修習營養學、遺傳學等之基礎。課程內容包括：1. 生物體之構成物質－包括碳水化合物、蛋白質、脂質等之構造與代謝；2. 生物能量之代謝；3. 生化反應之催化及控制－酵素；4. 遺傳訊息之傳遞－核酸。

142005 Biochemistry **2** **R** **Dept. of Food Science, F**

This course offer students the basic concepts of Biochemistry for further studying in nutrition and genetics. The contents include：the structure and metabolism of carbohydrates, proteins and lipids; the metabolism of energy; biochemical reaction catalysis and regulations－enzymes; and genetic control－nucleic acids.

142006 生物化學實習 1 必 食科系，上

本課程主要配合生物化學正課提供學生對於生物化學相關實驗之基本操作。課程內容包括： PH 值之測定法、緩衝溶液之製備、氨基酸之滴定曲線；2. 蛋白質一般反應、氨基酸與蛋白質之定性分析、蛋白質之定量分析；3. 醣類之定性分析與定量分析。

142006 Biochemistry Lab **1** **R** **Dept. of Food Science, F**

This course is to offer students about the basic practice of biochemistry. The contents

of the basic practice were to include： determination of pH values, preparation of buffers, titration curve of amino acids; general reactions of proteins, qualitative and quantitative determination of amino acids and proteins; and qualitative and quantitative determination of carbohydrates.

142007 動物遺傳學 2 必 張秀蓉、劉士哲，下

本課程旨在介紹遺傳學基本原理與解說生物體之遺傳特徵在世代間如何傳遞、遺傳密碼如何複製與表現，及其變異原因。課程內容包括孟德爾遺傳學、基因表現與互感、連鎖與性聯遺傳、遺傳之染色體學說、DNA之遺傳功能、複製、重組、轉錄與轉譯；最後簡介突變與核外遺傳對家畜之影響。

142007 Animal Genetics 2 R **H. L. Chang**

S. H. Liu, S

The objectives of this course are to introduce the principles of genetics and to state how the genetic characteristics being transmitted between generations, how the genetic code being replicated and expressed, and the causes of variation. It covers major topics usually taught in an introductory course, including classical Mendelian genetics, gene expression and interaction, linkage and sex linked inheritance, chromosome theory of inheritance, genetic function of DNA, replication, recombination, transcription and translation. In addition, both mutation and extranuclear inheritance are to be briefly introduced but not covered in detail.

142008 動物遺傳學實習 1 必 劉士哲，下

本課程旨在指導學生使其具遺傳學原理之基本知識與提供數量遺傳與分子遺傳相關技術之學習機會。實習課程內容涵蓋卡方檢測、族群遺傳調查、外表型下匯檢定、遺傳變異率估計、染色體與動物公母鑑別、核型分析、遺傳性狀觀察、動物細胞有絲分裂與減數分裂、DNA抽取、DNA純化、基因表現與突變等知識及相關技術之操作。

142008 Animal Genetics Lab. 1 R **S. H. Liu, S**

The aims of this practical lab are to provide students with basic knowledge of the principles of genetics and activities in quantitative and molecular genetic related technologies. The predicted activities are chi-square test, t-test for phenotypes, heritability estimation, chromosome and sex identification of animal, karyotype analysis, observation of genetic trait, meiosis and mitosis of animal cells, DNA extraction and purification, gene expression and mutation.

142009 動物營養學 2 必 謝寶森，下

本課程主要討論動物營養學的原理，包括：營養學的發展、動物營養消化生理、飼料的營養組成分、消化率測定、營養需要量測定、營養素的代謝利用過程，包括碳水化合物、脂質、蛋白質、礦物質、維生素及水之代謝；

最後並討論營養性疾病及營養知識的應用。

142009 Animal Nutrition 2 R **H. H. Hsieh, S**

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

142010 畜產加工學 2 必 林美貞，下

本課程介紹畜產品加工利用的方式與種類，使學生對乳、肉、蛋及魚肉與副產物利用有概括認識，並可提供往後研習肉品、乳品與蛋品加工之參考。主要內容包括各種畜產食品之原料特性、加工原理、以及加工步驟等。

142010 Processing of Animal Products 2 R **M. J. Lin, S**

This course will discuss the methods and type of animal products utility, in order to give students a basic insight into the meat, milk, egg, and poultry meat and their by-products utilization, and for the further study of meat processing and egg processing technique. The major content concludes animal food on structure and composition, functional properties of raw material of animal products, processing principles and procedures.

142011 畜產原料學 2 必 林美貞，上

本課程介紹畜產品原料的種類與特性，使學生對乳、肉、蛋及魚肉與副產物的特性有概括認識，並可提供往後研習肉品、乳品與蛋品加工之參考。主要內容包括各種畜產食品原料之構造、特性、組成營養價值、影響產品原料之因素以及原料之貯存與處理等。

142011 Materials of Animal Products 2 R **M. J. Lin, S**

This course will discuss the types and characteristics of animal product materials, in order to give students a basic insight into the materials of meat, milk, egg, and poultry meat and their by-products, and for the further study of meat, dairy and egg processing technique. The major contents conclude structure, characteristics, and composition of materials, functional properties of raw materials of animal products quality influencing factors, storage and handling of materials, and etc.

142012 畜產微生物學 2 必 林美貞，下

本課程講授微生物之特性及分類、原核細胞之結構、細菌之分類及鑑定、真核細胞之結構、真菌、原生生物及寄生蟲、病毒之分類及鑑定、微生物之生長、微生物之營養與代謝、微生物之控制及於基因工程之應用。並針對畜產相關之微生物加以探討，包括畜產品原料中微生物之性質和殺菌條件、原料之貯存技術、發酵微生物之加工特性及成品之微生物變敗。

142012 Microbiology of Animal 2 R **M. J. Lin, F**

Products

This course includes characteristics and classification of microorganisms, structure of procaryotes, classification and identification of bacteria, structure of eucaryotes, fungi, protists, parasites, classification and identification of virus, growth, nutrition and metabolism of microorganisms, microbial control, and genetic engineering. The course will focus on the microbiology related to animal production, including microbial control of animal products, properties and destruction of microorganism in animal products, storing technique of raw materials, processing characters of fermented culture, and microbial spoilage final products.

142013 畜產微生物學實習 1 必 林美貞，丁

本實習配合畜產品微生物學之課程，本次包括無菌操作之訓練、微生物之染色與計數、微生物之培養與分離、環境因子對微生物生長之影響、環境微生物之檢驗、抗生素檢查與發酵產品之製造。

142013 Microbiology of Animal Products Lab. 1 R **M. J. Lin, F**

The objective of this course is to give students a practical training on microbiological operation. It includes sterilization operation, staining and counting of microorganisms, isolation and cultivation of microorganisms, environmental factors, inspection of environmental microorganisms, examination of antibiotics, and manufacture of fermented products.

142014 豬隻飼養管理 1 必 夏良宗，上

本課程目的在於介紹台灣高溫多濕的環境下，養豬事業之成就與豐富之經驗以及國內外養豬業之先進技術與科學知識。其內容包括豬隻生理解剖、遺傳育種、品種選拔與改良、生物技術與生殖、營養與飼料、飼養管理、環境與污染控制、經濟經營規模與市場產銷等知識，再配合實際操作，使學生參與養豬現場之訓練，以期成為務實之經營者。

142014 Pig Feeding and Management 1 R **L.C. Hsia, F**

The purpose of this course is to introduce a technical basis and rich experience for successful production of swine industry under the high temperature and high moisture environments in Taiwan, and to provide the current new knowledge and technology of the world's swine science. The contents of this course advance in swine: physiology and anatomy, genetics and breeding, breeds selection and improvement, biotechnology and reproduction, feeds and nutrition, feeding and management, environment and waste control, economic size and marketing and so on. The practical training on-farm can be enhanced in this course.

142015 豬隻飼養管理實習 1 必 夏良宗，上

實習本次在使學生實際從事養豬技術、規劃及經營之訓練，以造就成為真正養豬經營之專業人才，諸如品種與選種評介、豬場清洗與消毒、分娩介助、發情觀察與配種、豬場紀錄規劃、豬舍建築設計與豬舍配置規劃、飼料

需求量估計、飼養成本之概估、經濟經營規模擬定、投資報酬之分析、市場供需資料之搜集及總生產成本與收益之計算與分析。

142015 Practice of Pig Feeding and Management 1 R **L. C. Hsia, F**

The contents of swine productive practice are to provide a training of students on technique, planning and management of swine production. It contains: swine breeding and selection, washing and sanitation of pig house, farrowing nurse, estrus observation and service, productive record, design and scaling of growing-finishing house and farrowing house, requirements of feeds, feeding cost, the decision of economic size, the analysis of investment and margin, collecting the information of the supply and demand on market, calculation and analysis of the total cost of production and total revenue.

142016 家禽飼養管理 1 必 謝豐旭，上

本課程介紹家禽飼養管理之理論與實務作業技術，包括：家禽品種，種雞經營，孵化作業，育雛及一般飼養管理，雞舍與設備操作，疾病防治與產品屠宰、包裝及銷售等事務，使學生對家禽產業之整合，生產現況與未來發展有全盤之認識。

142016 Poultry Feeding and Management 1 R **H. H. Hsieh, F**

The objective of this course is to introduce the theory and practical operation technique of poultry to the students. The contents include：breeds and students of poultry, management of breeders, hatching operation, brooding and rearing, houses and equipment operation, disease control, processing and marketing products .

142017 家禽飼養管理實習 1 必 謝豐旭，上

本課程實習內容主要配合「家禽飼養管理」課程，使學生實際進行生產過程所需要之操作訓練，包括：種蛋之處理、孵化技術、飼養試驗、配合課程之需要邀請現場人員作專題研討、並參觀實習，包括：自動化飼養系統、屠宰作業、雞蛋洗選包裝等，使學生充分瞭解家禽生產之作業技術。

142017 Practice of Poultry Feeding and Management 1 R **H. H. Hsieh, F**

This practice course is associated with the poultry productive technique to enforce the students on the skill and technique part through field practice. Learning by doing is the basic concept of technique education. In this course students are allocated into groups to operate the whole process for poultry production, include：hatching eggs operations, hatchery technique and feeding trials. In addition there will be seminars and direct discussion with industry people, field trip to commercial farm processing plant, etc, Through this practice course students will get a comprehensive knowledge of poultry production.

142018 乳用家畜飼養管理 1 必 沈朋志等，下

本課程主要著重於熱帶地區高溫多濕環境下乳用家畜飼養管理之理論與實務，對於擠乳管理、電腦管理系統，完全混合日糧飼養系統，畜舍降溫裝置，最新反芻營養科技資料以及乳用家畜較常發生之疾病與其防治加以闡述，以訓練學生對於經營農場具信心。

142018 Dairy Livestock Feeding and Management 1 R **P. C. Shen, *et al.*, F**

This course lays special emphasis on the feeding and management of dairy livestock in the high temperature and humid environment. This includes milking management, computer management system, TMR feeding system, house cooling equipment, recent ruminant nutrition knowledge, disease and control of dairy cows, this will give the students more confidence in running the dairy farm.

142019 乳用家畜飼養管理實習 1 必 沈朋志等，下

本課程之本旨旨在讓學生熟悉乳用家畜管理技術，例如人工授精與妊娠診斷，公牛精液選擇，擠奶機功能檢測，血液檢查，粗料乾物質快速測定；營養代謝性疾病之認識與檢測；並鼓勵學生多與民間乳牛場接觸，以發掘現存之問題與設法解決達到理論與實際之配合。

142019 Practice of Feeding and Management in Dairy Livestock 1 R **P. C. Shen *et al*, F**

The purpose of this course is to give the students more familiar with the management tool of dairy livestock. This includes artificial insemination and pregnancy diagnosis, bull frozen semen selection, milking machine function testing, blood test of dairy cow, rapid testing of roughage dry matter contents, nutritional metabolic disorders. The students were encouraged to visit private dairy farm so that they could learn more problems and try to find solutions.

142020 動物育種學 2 必 張秀蘭，上

本課程之目的在解析家畜育種學原理，並介紹各種育種技術於家畜改良計畫之應用。課程本容包括族群基因頻率、簡單與多基因遺傳性狀、選拔原理與應用、配種制度、數量性狀之遺傳模式、遺傳參數估計與應用、生物技術發展與家畜育種之應用。

142020 Animal Breeding 2 R **H. L. Chang, F**

The objectives of this course are to provide an understanding of the principles of animal breeding and to introduce the application of animal breeding techniques in farm animal improvement programs. Material includes gene frequencies in populations, simple-inherited and polygenic traits, selection, mating systems, genetic models for quantitative traits, estimation and application of genetic parameters, development of biotechnology and its application in animal breeding.

142021 畜產保健 4 必 獸醫系，上下

本課程目的在使學生瞭解畜禽疾病之理論與實際及簡單外科手術。其內包括有關傳染性、內科性及繁殖性疾病之控制、消毒及預防措施，並同時教導學生有關外傷性之簡單外科處理技術。期能使學生瞭解疾病之發生、處理及預防方法。

142021 Livestock Health 4 R **Dept. of Verterinary, F, S**

This course will introduce students the theory of important domestic animal diseases and simple surgical techniques. It provides students general knowledge of disease control; aseptic procedure; and prevention of infectious diseases, internal diseases and reproductive disorder. It also teaches students basic surgical techniques for wounds care. Students are expected to understand the knowledge of diseases occurrence, and the methods of medical treatment and disease prevention.

142022 畜產保健實習 2 必 獸醫系，上下

本課程配合上課，著重於疾病診斷與預防，主要在提供學生對於畜禽傳染性、內科性及繁殖障礙性疾病之控制、消毒及預防等基本概念與操作，並教導簡單之外科縫合技術。期能使學生瞭解疾病之處理及預防之實際處理方式。

142022 Practice of Livestock Health 2 R **Dept. of Verterinary, F, S**

This course introduces the method of diseases diagnosis and prevention. It provides the basic concepts and operative practices in diseases control; aseptic procedure; and prevention in animal infection diseases, internal diseases and reproductive disorder. It also teaches students basic and practical surgical techniques.

142023 經濟動物繁殖學 2 必 劉炳燦等，上

本課程著重於討論畜禽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畜禽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，提升改善畜禽繁殖效率之能力。

142023 Reproductive of Farm Animal 2 R **B. T. Liu *et al,* F**

The objective of this course is to give the students more confidence in their abilities for improving the reproductive efficiency of the livestock. Dealing with the modern concepts and the recent techniques in livestock reproduction, it consists of the following subjects: evaluation and improving of the reproductive functions of the breeding livestock; reproductive management; selection on the reproductive characteristics; methods of sex selection; applications of artificial insemination and in vitro fertilization; micromanipulation and preservation of the gametes and embryos; the technique of

embryo transfer; and so on. The topics being put in the priority are those techniques that are capable of being used for restoring the prevalent reproductive failure of the livestock under the environmental stress. For catching up the new developing concepts and techniques, students are required to read and discuss the publication in livestock reproduction.

二、選修科目 Selective Courses

142024 有機化學 3 選 環工系，T

本課程著注重於重要之碳合物（包括烷、醇、醚、有機鹵化物、芳香族化合物、醛、酮、酸、酯及胺）之官能基反應，各類之合成方法，相互間之關係以及其實際之應用。

142024Organic Chemistry 3 S **Dept. of Environmental Engineering and Science, S**

A systematic study of the reaction in each functional group in the important classes of carbon compounds (alkane, alcohol, ether, organic halides, aromatic compounds, aldehyde, ketone, carboxylic acids, ester and amine) the methods of the synthesis of each compound, the relationship and it's uses in each compound.

142025 有機化學實習 1 選 環工系，T

本課程係為非提供主修有機化學之學生而開設，其促使學生得以熟悉一般有機化學之實驗技術，並從實驗中增加對教材之瞭解。本實驗除授以物理常之測定外，並依各官能基之下列之化合物逐一實驗：烷、烯、苯、有機鹵化物、醇、醚、酮、羧酸衍生物及胺等，每一實驗之重點是下列之官能基所應主的下列化學反應的試驗。

142025 Organic Chemistry Lab. 1 S **Dept. of Environmental Engineering and Science, S**

This course is designed in conjunction with the lecture of organic chemistry for the students that are not major in organic chemistry. It intends to provide students a profound understanding of subject, matter from laboratory work and familiar with basic laboratory technique. In addition to the measurements of physical constants, the course is carried out in a functional approach: alkanes, alkenes, alkynes, benzenes, organic halides, alcohols, ethers, aldehydes, ketones, carboxylic acids and the derivatives of carboxylic acid, amines. Each experiment will emphasize on the common chemical properties ascribed to functional groups.

142026 專題研究 1 選 全系老師，上

本課程擬經由報告之收集、研讀與彙整，除令學生從而習得相關之專業

知識外，亦期能自之獲得資料之分析、歸納與邏輯思考之能力，並藉由書面報告、口頭發表及討論之歷練，以培養學生之論文撰寫能力及口頭表達能力。

142026 Projects Research 1 S Faculties, F

The purpose of this course is to give students training on searching information, reviewing references, designing experiment, collecting and analyzing data. The subjects cover modern aspects of animal science and farm operation. Students must give oral presentation and dissertation.

142027 學士論文 1 選 全系老師，下

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

142027 Dissertation 1 S Faculties, S

This course is designed to train students the ability in searching literature, organization of material and presentation. Students are required to select a topic in the field of those related to their thesis, search and review literature and draw up a brief. This presentation is scheduled for every student once a semester.

142028 畜產機械 2 選 生物系統工程系，上

本課程之目的係介紹畜產機械之種類構造原理利用與維護，其內容包括緒論、機械原理、牧草地之造成機械、畜舍建築及管理利用機械、放牧利用之設施與機械、畜產加工利用與機械及畜舍廢棄物處理與利用機械等。

142028 Animal Production Machinery 2 S Dept. of Biosystem Engineering, F

The subject of this course contains structure utilization and maintenance of animal husbandry machinery. Main topics include introduction, theory of machines, reclamation machinery for pasture, animal house management machines, pasture machines and installations, equipment for animal products, and equipment for livestock wastes.

142029 畜產機械實習 1 選 生物系統工程系，上

本課程係配合正課實際需要，其重點係注重操作管理及維護保養以達到理論與實際技術相配合，其內容包括汽柴油引擎之維護保養與實習、曳引機駕駛維護保養與實習、牧草機操作機械保養與實習、畜舍建築及利用機械操作實習、自動給飼機械之操作及保養實習、畜產加工利用機械實習及畜舍廢棄物處理及利用機械操作保養實習。

142029Practice of Animal Production Machinery 1 S Dept. of Engineering, F

This practice course provides essential technology training for students to operate,

and maintenance for animal husbandry machinery. Main topics include training to skill of operate and maintenance for diesel engine, training to skill of operate and maintenance for tractor, forage harvesting operate and maintenance, animal house management machines, automatic feeding machine, equipment for animal products, and equipment for livestock waste.

142030 動物內分泌學 2 選 余祺，上

本課程主要講授家畜內分泌腺（組織）所分泌的激素種類、調節作用機轉、下視丘和腦下腺間之相互調控，及各激素的生理機能，本課程將有助於學生對激素整體了解，以培養更深入研究內分泌之能力。

142030 Animal Endocrinology 2 S **C. Yu, F**

This course is designed for study the classes of hormones, the mechanisms of hormone action, the control of hypothalamic-hypophyseal hormone and the physiological roles of the endocrine glands (tissues) in domestic animal. After complete this course, students can understand the hormone functions and can learn advance topic easily.

142031 細胞生物學 3 選 余祺，下

本課程講授細胞結構、生理與功能、細胞膜運輸、信息傳導、細胞能量轉換、細胞核、細胞週期、基因重組、轉錄、轉譯、基因表現調節等，使學生瞭解細胞的生命現象，奠定學生對動物科學之認知。

142031 Cell Biology 3 S **C. Yu, S**

The basic structure, physiology and function of the cell, membrane transport, signal transduction, energy flow in cells, cell cycle, genetic recombination, transcription, translation, gene expression are discussed in this course. It makes the students aware the basic animal science.

142032 分子生物學 3 選 余祺、劉士豪，上

本課程介紹基因、核酸物質、基因複製的過程，並介紹各種定性、定量技術及基因工程之理論基礎，以符合目前生物技術發展的趨勢，作為生物技術的基礎。

142032 Molecular Biology 3 S **C. Yu,**

S. H. Liu, S

This course is going to introduce the basic theories about DNA, RNA, DNA replication, transcription and translation also, the techniques about DNA sequencing and genetic enginnering will be introduced in this course. In order to learn more biotechniques, molecular biology is the important basic course to all students who study in life science.

142033 經濟動物繁殖技術 1 選 沈朋志、

劉士賢，上

本實習之目的在配合「畜產繁殖技術」課程進度，使學生藉由人為之控制提高畜產繁殖效率，並育成合乎人類所需之經濟動物。課程內容設計以畜產類別為單位，分別探討其繁殖生理特性、繁殖方法與繁殖管理、人為控制之發情與排卵、人工授精、懷孕診斷、分娩控制、胚移置及縮短世代間距之各種方法。

142033 Reproductive Techniques of Farm Animal 1 S **P. C. Shen, S. S. Liu, F**

Objectives of this course are: 1) increasing reproductive efficiency by artificial control, 2) cropping desired economic animal. Class is arranged by animal species. Topics include the characteristics of reproductive physiology and management, artificial control of estrus, ovulation, and insemination, pregnancy diagnosis, control of parturition, reducing calving interval and embryo transfer.

142034 實驗動物飼養管理 2 選 沈朋志等，上

本課程主要介紹應用於農學及生物醫學之實驗動物的飼養管理及其動物學之基礎特性，以作為研究、治療及實驗之模式系統。課程內容包括實驗動物種類與命名及育種、實驗動物管理標準操作程序；實驗動物飼養環境與設施；實驗動物營養與飼養管理；實驗動物網路資源；實驗動物品質管制；以及實驗動物疾病與人畜共通傳染病等，涵蓋之實驗動物有小鼠、大鼠、倉鼠、天竺鼠、家兔、犬及家畜等，以有助於瞭解實驗動物在農學及生物醫學等領域之科技研發上所扮演之角色與特性。

142034 Laboratory Animal Feeding and Management 2 S **P. C. Shen et al., F**

This course provides a concept and introduction to the feeding and management of laboratory animals applied in the research of agriculture and biomedical medicine. It includes the standard operative procedures, environmental control, nutrition and feeding, network resources for laboratory animals, quality control, important zoonosis and health control.

142035 實驗動物飼養管理實習 1 選 沈朋志等，上

本課程主要介紹應用於農學及生物醫學之實驗動物的飼養管理方法及其實務操作，以作為研究、治療及實驗之模式系統。課程內容包括實驗動物之動物識別與記錄；實驗動物感染認證及標準操作程序編寫；實驗動物之大體解剖操作與生理構造；動情週期及配種觀察；實驗動物之保定、採血、注射與麻醉；實驗動物之健康診斷與治療等，涵蓋之實驗動物有小鼠、大鼠、倉鼠、天竺鼠、家兔、犬及家畜等，以有助於學生習得各種實驗動物之飼養管理技術。

142035 Laboratory Animal Feeding 1 S **P. C. Shen et al.,**

and Management Practice F

This practical course emphasizes on the technical training about identification, record, recognizance and SOP of the laboratory animals, gross anatomy and physiological function, reproductive cycles and breeding observation, holding, bleeding, injection and anesthesia, health monitoring and simple practice in disease diagnosis and exclusion.

142036 動物遺傳工程 2 選 沈朋志，T

動物遺傳工程課程首先介紹動物遺傳基因與 DNA 之構造與功能，其次介紹動物染色體構造與複製，基因連鎖與突變，DNA 複製與重組技術及其應用，基因之突變與重組之遺傳機制，重組 DNA 之表現及遺傳分析技術。

142036 Animal Genetic Engineering 2 S P. C. Shen, S

The major goal of the animal genetic engineering course is to emphasize the animal genetics, DNA structure and function, chromosome structure and replication, gene linkage and mutation, the techniques and application of DNA replication and recombination, the mechanism on mutation and recombination of the gene, the expression of recombination DNA and the analysis of DNA variation.

142037 動物遺傳工程實習 1 選 沈朋志，T

本課程配合動物遺傳工程課程使學生瞭解動物遺傳基因與 DNA 之構造與功能，其次使學生實際操作動物細胞 DNA 抽取與 DNA 純化、DNA 體外複製方法、限制酵素切割方法、重組 DNA 技術、細胞培養、標的基因之確認與選殖、標的基因表現與突變等有關技術。

142037 Animal Genetic Engineering Practice. 1 S P. C. Shen, S

This course is to practice the technique in animal DNA extraction and purification, DNA replication by polymerase chain reaction, the digestion of restriction enzyme, analysis of the restriction map, DNA recombination, cells culture, identification and cloning of trait genes, target gene expression and mutation.

142038 功能性基因體學 2 選 劉士豪，上

本課程目標著重在介紹基因體完成定序的意義，不僅只是驗證解讀個別基因的功能，還著重在基因間之相互作用是如何協調與控制，以及這種基因間的協調與控制在農業、醫學、工業、生態與環保等領域所產生的正面效應。

142038 Functional Genomics 2 S S. H. Liu, F

The goals of this course intends to introduce students the concepts regarding the significance of completion of **sequencing** the whole genome, not just the annotation of gene function, but the organization and control of gene pathways that may impact on fields of griculture, medicine, industry, ecology, and environment.

142039 生物資訊學概論 2 選 劉世賢等，下

本課程目的在訓練學生使用網路上的軟體程式去分析網路上的生物資料庫，並從中解讀或汲取有用的生物資訊。課程內容包括生物資料庫簡介、DNA與蛋白質序列比對、蛋白質與RNA結構預測、單核苷酸多態型(SNPs)分析、演化樹建構以及生物傳導路徑等。修課學生須至少須修過生物化學、遺傳學或分子生物學(任一門皆可)。

142039 Essential Bioinformatics 2 R S. H. Liu, S

The multidisciplinary course attempts to train students using web-based programs to analyze and retrive useful biological information from web-based database. Topics including: biological databases, sequence alignments, structure prediction on macromolecules, single nucleotide polymorphisms (SNPs), constructure of phylogenies, molecular interaction of biopathway. Students are required to have taken at least one of the following classes: biochemistry, genetics, or molecular biology in advance.

142040 實驗動物應用學 2 選 劉世賢等，下

本課程以實驗動物在各專業領域之應用之講授主體，授課內容包括法規及管理以及應用概論等等，進而至醫學、健康食品檢測、臨床前安全及功能評估、疫苗工業以及在生殖科技等之應用進行講授。期能使學生瞭解實驗動物在各領域應用相關資訊，進而提昇未來投入實驗動物相關行業興趣。

142040 Application of Laboratory Animals **2 S S. S. Liu et al., S**

This course is to study the application of laboratory animals in different field. The content of this course includes regulation, management, general application, application in medicine, monitoring system of health foods, estimation of security and function before clinical treatment, vaccine industry and reproductive biotechnology. Students could learn the relevant information in different fields, and increase their interest in joining the industry of applied laboratory animals in the future.

142041 實驗動物應用學實習 1 選 劉世賢等，下

本課程以實驗動物在各專業領域之應用之實習及實地參訪為主體，授課內容包括醫學、健康食品檢測、臨床前安全及功能評估、疫苗工業以及在生殖科技等之應用進行實習與實地參訪行程。期能使學生瞭解實驗動物在各領域應用相關資訊，進而提昇未來投入實驗動物相關行業興趣。

142041 Application of Laboratory Animals Practice. **1 S S. S. Liu et.al., S**

This course is major in the practice and visiting of application of Laboratory animals in different field. The content includes the application in the medicine, the monitor of health foods, the estimate of security and function before clinical treatment, vaccine

industry and reproductive biotechnology, etc. From those practice and visiting will let students understand that the relevant information in different fields are used, and then promote and invest the relevant trade interest of Laboratory animals in the future.

142042 動物基因轉殖 2 選 沈朋志，上

本課程目的在介紹動物基因轉殖相關之技術，包含受精卵收集處理與培養、標的基因之構築、原核 DNA 顯微注射方法、胚胎培養、胚移置、標的基因之鑑定、轉殖基因動物之評估、以及基因轉殖動物與人類醫藥用蛋白質。

142042 Animal Transgenics 2 S P. C. Shen, F

This course is to introduce the technique for the animal transgenics. The contents include: the collecting and culture of zygote, construction of target gene, pronuclear DNA microinjection, embryo culture, embryo transfer, identification of target gene, evaluation of transgenic lines, production of transgenic animal and medicine protein for human.

142043 族群遺傳學 2 選 張秀鑾，上

本課程旨在介紹族群遺傳學本涵與數學理論之應用，課程內容主要包括體染色體與性染色體基因座基因頻率估算、哈溫原理、配種系統、親屬間關係與改變基因頻率之歷力。

142043 Introduction to Population Genetics 2 S H. L. Chang, F

The aims of this course are to introduce the insight of population genetics and to state the application of mathematical theory in this aspect. Course contents will include estimation of allele frequency for autosomal and X-chromosomal loci, Hardy-Weinberg principle, systems of mating, relationships between relatives, and forces that change allele frequency.

142044 數量遺傳學導論 2 選 張秀鑾，下

本課程旨在介紹數量遺傳學基本原理與解說多基因性狀及其在世代間之遺傳特性，內容主要包括交替基因介紹、基因型與基因頻率估算、具上位作用之逢機配種、親屬間相似性、路徑係數、重複勢、遺傳變異率，以及單性狀與多性狀選拔等。

142044 Introduction to Quantitative Genetics 2 S H. L. Chang, S

The objectives of this course are to provide an introduction to the principles of quantitative genetics and to state how the polygenic traits being characterized and transmitted between generations. Contents mainly cover allelic, genotypic and gametic frequencies, random mating with epistasis, covariances between relatives, path coefficient analysis, repeatability, heritability, selection, correlated characteristics, and selection more than one characteristic.

142045 應用生物統計學 2 選 張秀鑾，下

本課程旨在介紹常用於資料分析之統計基礎原理，課程內容包括矩陣代數複習、二次型分布、迴歸、變方分析與統計模式建立策略等；最終目的在建立學生具備應用 SAS 商業套裝軟體，進行複雜資料分析與準確地解釋分析結果之能力。

142045 Applied Biostatistics 2 S **H. L. Chang, S**

The course provides an introduction to fundamental theory of the most commonly used linear models in statistical data analysis. Review of matrix algebra, distribution of quadratic forms, regression, and analysis of variance are covered, as well as statistical model-building strategies. The final goal is to equip the students with the ability to correctly apply the SAS commercial statistical packages to analyze the complex data and to interpret the results accurately.

142046 遺傳評估法 2 選 張秀鑾，上

本課程之主要目的為在闡釋計量遺傳之基本原理，並利用最佳線性無偏預測式（BLUP）與相關之線性混合模式法於動物育種中，結合系譜資訊與性能紀錄進行種畜禽遺傳潛能，達到準確地選留優良種畜禽之目標。

142046 Introduction to Genetic Evaluation 2 S **H. L. Chang, S**

The aims of this course are to state the theory of quantitative genetics and the useful methodology applied in evaluation, including the best linear unbiased prediction (BLUP) and related linear mixed model, for animal breeding. The application of integration of pedigree information and performance records to improve selection accuracy for breeding stocks will be also covered.

142047 台灣畜禽經濟動物之永續利用 2 選 張秀鑾，下

本課程旨在介紹生物多樣性維護之理論基礎、種原基因保存、管理與應用機制，以達到動物遺傳資源永續利用之目的。課程內容包括台灣畜禽資源簡介、畜禽動物活體與離體保存法、國內外畜禽遺傳資源交流國外機制、國際條約與國內相關法規等。

142047 Sustainable Utilization of Taiwan Farm Animal Genetic Resources 2 S **H. L. Chang, F**

The objectives of this course are to state the fundamental theory of biodiversity maintenance, germplasm preservation, management and application mechanism for sustainable utilization of farm animal. Material includes an introduction of Taiwan farm animal genetic resources, both in- and ex-situ conservation protocols, and exchange mechanism of genetic resources for local and global usages, as well as acts, rules and regulations applied to nation and international purpose.

142048 免疫學 3 選 陸秀琪、鍾文彬，下

本課程主要提供非獸醫學生學習一般的免疫學概論，將介紹免疫系統之作用，包括免疫細胞的種類與生成機制，介紹抗原、半抗原與抗體之定義與應用，免疫系統之基本運作機制，免疫球蛋白之種類與結構，免疫細胞之功能以及免疫化學相關之應用。

142048 Immunology 3 S **H. C. Chaung, W. B. Chung, S**

General concepts on Immunology will be introduced in this course, including different types of immune cells and their synthesis, definitions of antigens, haptens and antibodies and their applications, the basic mechanisms in regulating immune responses, types of immunoglobulins and their structures, the functions of different immune cells and the applications of immunochemistry.

142049 胚胎學 2 選 沈朋志，上

本課程的設計主要是幫助學生了解生命的開始，包括生殖細胞的形成、受精過程、胚胎發育、胚胎著床、胚幹細胞的分化、器官形成、先天的遺傳缺陷。胚胎形成的機制包含、細胞生長、細胞凋亡、細胞分化、細胞治療與再生醫學的應用。

142049 Embryology 2 S **P. C. Shen, F**

Lecture will help the students to understand the origin of life, including gemetogenesis, fertilization, embryo development, implantation, differentiation of embryonic stem cells, organogenesis and congenital malformation. Mechanisms of embryogenesis contain cell growth, apoptosis, cell differentiation, cell therapy and the application on regenerative medicine.

142050 農業政策與法規 2 選 張秀鑾等，上

本課程旨在介紹農業政策的意義、內容與相關法規，培養學生具備農業動物資源政策分析與援用相關法規之能力。課程內容包括農業政策、畜牧法規與施行細則、農業資源管理、畜產品生產與廢棄物資源化等有關法令，藉以充實法律常識、培育動物科技人員兼具專業與法律素養。

142050 Agricultural Policy and Laws 2 S **H. L. Chang *et al.*, F**

The objective of this course is to introduce the concept and contents of agricultural policy, laws and regulations related to animal industry, and thus provide students with the ability of invoking an article of law or regulations. Material includes current agricultural policy, animal industry act and the enforcement rules, rules or regulations for management of agricultural resources, and for animal production as well as for waste treatment law with promoting in both reducing waste and recycling resources.

142051 馬學　2　選　劉炳煥、劉士賢，下

本課程係討論馬的飼養及管理有關的各項問題，本次包括有養馬事業的歷史與發展、馬的鑑別與選拔、品種與類型、營養與飼料、日常照料、行為與調教、馬廄管理、馬的放牧及衛生管理。

142051 Equine Science　2　S　B.T. Liu S.S. Liu, S

The course will deal with the feeding and management of horse. It will cover the history and development of the horses industry, selecting and judging horses, breeds and types of horses, nutrition and feeds for horses, feeding and management, horse behavior and training, pasture for horses, and horses health, disease prevention, and parasite control.

142052 馬學實習　1　選　劉炳煥、劉士賢，下

本實習課程旨在探討馬的習性、飼養管理及御馬，並使學生習得馬飼養、清潔、修蹄、騎乘之基本技能。主要課程本次包括：馬的習性、馬舍管理、馬之調教清潔、馬蹄保護及騎乘。

142052 Equine Science Practice　1　S　B.T. Liu S.S. Liu, S

The purpose of this course is to give students more familiar with horse behavior, management, horse training, and horse driving. It contains: horse behavior and training, care and management, herd health, hoof care, and the skill of horses riding.

142053 單胃動物營養與飼料　2　選　謝豐旭，上

本課程係針對單胃動物之營養需要，給予飼料之種類，及特性作較深入之闡述，共本次包括：豬各生長階段之營養需要、種豬之營養需要、養豬飼料之種類及特性、馬不同用途之營養需要、馬飼料之特性。

142053 Monogastric Animal Nutrition and Feed　2　S　H. H. Hsieh, F

The object of this course is to give the students more deep descriptions on the nutrition requirements and feed kinds and characteristics of the monogastric animals. The course includes the nutrition requirements for swine in different growing stage, the

nutrition requirements for the sow and boar, the kinds and characteristics of swine feed, the nutrition requirements for the horses of different uses, and the kinds and characteristics of horses.

142054 反芻動物營養與飼料 2 選 余祺，丁

本課程之設計在討論反芻動物營養與飼料之特性和應用。本容包括瘤胃的環境，各種養分如碳水化合物、蛋白質和脂質在瘤胃的發酵，與胃腸道有關的營養性問題，進而討論反芻動物營養需要量，飼料之類別及日糧之平衡。

142054 Ruminant Nutrition and Feed 2 S C. Yu, S

This course is designed to discuss the characteristics and application of ruminant animal nutrition and feeds. The contents include: rumen environment; carbohydrate, protein and lipid fermentation in rumen; nutritional problems related to the gastro-intestinal tract; nutrient requirement of ruminant animal; classification of feeds and balance of ration.

142055 牧場經營學 2 選 斗定，丁

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

142055 Livestock Production Management 2 S ,S

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

142056 飼料製造技術 1 選 謝亨泰，上

本課程乃教授畜及魚類等主配合飼料製造工業之現代技術，本容包括：單味飼料之生產方式與一般生產過程之影響因素、飼料預混劑之製造技術、配合飼料之製造包括設計、收料、混合、製粒、包裝儲存與糖蜜、油脂等液體原料添加之有關技術、養魚飼料之製造技術等。

142056 Feed Manufacture Technology 1 S H. H. Hsieh, F

The objective of this course is to acquaint the students with the modern technique about the formula feed industry of the livestock, poultry and fish. The course contains the processing of the ingredient feed and the influent factors about general processing problems; processing and adding of feed premix; the engineering of formula feed, including design, receiving, grinding, mixing, pelleting, bagging, weighing, loading and

the technique of addition of liquid ingredients; and the technique of manufacturing of the fish formula feeds.

142057 飼料製造技術實習 1 選 謝享雄，上

配合『飼料製造技術』課程之講授本校，作實地之見習與操作，藉以提高該課程之教學效果，本校包括：單味原料製造方法之見習、參觀各單味原料工廠，比較不同生產方法之結果、配合飼料工廠製造技術見習及操作。

142057 Feed Manufacture Technology Practice. 1 S **H. H. Hsieh, F**

In conjunction with the lectures of the course of feed manufacturing technology, students are provided with the opportunity for the exercise and practical operation of the feed manufacturing technology, to enhance the effects of this course. The exercise of the feed manufacturing technology covers observation the processing of the various feed ingredients, visit feed plants to compare the results of different processes of feed ingredient, and explanation and operation of the process on the formula feed manufacturing.

142058 飼料配方設計 2 選 謝享雄，下

本課程係傳授各種畜禽飼料添加物及飼料配方之最新設計技術，其本校包括：飼料添加物之種類、特性及用途、飼料配方之設計原理與設計方法、養豬飼料配方之設計、養雞飼料配方之設計、反芻動物飼料配方之設計、其他飼料配方之設計。

142058 Design of Feed Formulation 2 S **H. H. Hsieh, S**

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

142059 動物行為 2 選 夏良平，上

本課程在使學生瞭解動物行為學之一般原理，課程本校包括：什麼是行為、適應性行為、簡單行為、生物節奏與時鐘、訊號刺激、行為的基因基礎、生理準備、學習、銘印、遷移、社會行為、溝通、統治階級、領域、性行為、轉移動作及社會生物學等。

142059 Animal Behavior 2 S **L. C. Hsia, F**

This course is on introduction to the study of general concepts of animal behavior. It is offered to cover topics such as what is behavior?; behavior as adaptation; simple behavior; biological rhythms; sign stimuli; the genetic; physiological readiness; learning; imprinting; migration; social behavior; communication; dominance; territoriality; sexual

behavior; displacement activity; and sociobiology.

142060 家畜環境生理學 2 選 謝興華，上

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

142060 Environmental Physiology of Domestic Animals. 2 S **H. H. Hsieh, F**

This course will discuss the environmental factors, climatic conditions and physiological mechanisms of domestic animals, and further investigate the effects of environments on the performance of animals. The important object of this course is to evaluate some methods to overcome the animal production problems due to the warm humid environments in Taiwan.

142061 寵物飼養管理 2 選 余祺，下

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

142061 Pet Feeding and Management 2 S **C. Yu, S**

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

142062 牛羊兔食家畜飼養管理 2 選 斗定，下

本課程主要討論兔及山羊等草食性用家畜之飼養管理。內容包括品種特性、營養與飼養、管理與設備、遺傳育種與繁殖技術、疾病防治與產品利用，畜舍規劃與牧場經營等主題，並特別強調在本省地區之特殊環境下，如何經由學理與技術之應用，以謀適經營及管理方法，提昇生產效率。

142062 Meat-production Ruminant Farm Animal Feeding and Management 2 S **, S**

The objective of this course is to give the students more confidence in their abilities for meat-production herbivorous farm animals. The major concepts of this course include: major breeds of rabbits and goats, their characteristics, principles of genetics, nutrition, feeds and feeding, herd and reproductive managements, reproductive techniques, disease control, marketing, and management of products. The topics being put in the priority are

those factors and techniques that are capable of being used for improving the efficiency of rabbits and goats production under the adverse environmental conditions.

142063 水禽飼養管理 2 選 斗定，ㄎ

本課程在使學生瞭解水禽的飼養管理，課程內容包括：水禽簡介、鴨及鵝的特性與習性、水禽的品種、鴨及鵝的捕捉與固定法、種禽的選擇與配種、鴨及鵝的雌雄鑑別法、種用水禽的房舍、飼養及管理、種蛋的管理及保存、鴨蛋及鵝蛋的孵化法、成用鴨、鵝的生產，水禽產品的處理。

142063 Waterfowl Feeding and Management 2 S , S

An advanced study of waterfowl production that includes introduction to waterfowl, their peculiarities and habits, breeds, handing and holding of waterfowl, selection of breeders and management of the breeds, caring and holding of hatching eggs, incubation of duck and geese egg, production of market ducks and geese, the processing of waterfowl etc.

142064 鹿學 2 選 劉炳燦，ㄌ

本課程之討論範圍包括鹿的生物學及台灣現有鹿種之特性，營養與飼養，管理與設備，繁殖管理，疾病防治與產品利用，鹿舍規劃與牧場經營，並特別強調在台灣之特殊環境下，如何經由學理與技術之應用，以謀適經營及管理方法，提昇生產效率。

142064 Deer Science 2 S **B. T. Liu, F**

The objective of this course is to give the students more confidence in their abilities for producing domestic deer, managing and improving deer industry. Dealing with the modern concepts in deer science, it comprises the following subjects: biology of the cervides; major breeds of the native cervides and their characteristics; principles of cervides genetics, nutrition, feeds and feeding; herd and reproductive managements; deer farm planning; disease control; preparation and marketing of the deer products, and so on. The topics being put in the priority are those factors and techniques that are capable of being used for improving the efficiency of deer production under the native conditions.

142065 動物福利 2 選 夏ㄐㄧㄣ，ㄎ

本課程之目的在使學生能深刻瞭解動物福利，以為從事畜牧生產之基礎。課程內容包括：動物福利定義、緊迫對動物的影響、動物福利和產業之關係、各種家畜禽動物之福利。

142065 Animal Welfare 2 S **L. C. Hsia, S**

The arrangement of this course is to let the students understand the knowledge about animal welfare. The following topics included in the course: definition of animal welfare, the influence of stress on farm animals, animal welfare, animal welfare and industry, and specific topic of animal welfare on different farm animals.

142066 禽畜廢棄物管理 2 選 斗定，下

本課程旨在協助學生熟悉畜牧廢棄物之特性，一般廢棄物處理技術與原理，三段式廢水處理場之設計及各種禽畜污染防治技術，堆肥原理與製作，脫臭原理與技術，污染之減量及處理，以達到環保法規之要求標準，為能永續發展。

142066 Poultry and Livestock Waste Management 2 S , S

The purpose of this course is to assist the students to understand the characteristics of animal waste, the general principles and techniques of treatment, the design of wastewater treatment plant, composting treatment, odor control and sludge minimization in order to achieve the EPA required standards.

142067 禽畜廢棄物管理實習 1 選 斗定，下

本課程旨在協助學生熟悉畜牧廢水或排放水之一般分析，其內包括實驗室之安全注意事項，品保與品管，廢水之取樣與保存，QC，COD、BOD、TS、SS、VSS、N、P、PH，杯皿試驗，導電度，透視度與沈降性試驗與堆肥腐熟度與有機質分析。

142067 Poultry and Livestock Waste Management Practices 1 S , S

The purpose of this Course to is assist the students to understand the analysis and sampling procedure of wastewater and discharge water including the QA and QC of laboratory, COD, BOD, TS, SS, VSS, N, P, PH, jar test, conductivity, transparency test and SV_{30} test, compost maturity and organic matter analysis.

142068 安全畜產品生產導論 2 選 斗定，上

本課程探討安全性畜產品生產之一貫作業方式，使學生能在日後生產安全性畜產品時，能應用所學相關知識。主要課程內容包括：安全性飼料、動物飼養管理、防疫監測、安全性加工生產及安全性廢棄物處理。

142068 Introduction to Safe Animal Production 2 S ,F

The arrangement of this course is to let the student understand the knowledge about safe animal production chain. The major concepts of this course include: the safety definition, feeds quality, feed additives, feeding and management, diseases control, safe processing, and safe waste management.

142069 安全畜產品生產技術 2 選 斗定，上

本課程探討安全性畜產品生產之技術，使學生能在日後生產安全性畜產

品時，能應用所學相關知識。主要課程內容包括：安全性飼料製造、動物飼養管理、防疫監測、安全性加工製造及抗生素殘留檢測分析。

142069 Techniques of Safe Animal Production 2 S , F

The arrangement of this course is to let the student understand the technique about safe animal production. Specific topics including the safe feed manufacturing, feed additives, animal feeding and management, diseases control, safe animal products processing, and antibiotic residues analysis.

142070 安全畜產品檢驗與管 2 選 林美貞，上

本課程使學生了解安全畜產品檢驗與分析的儀器與設備之基本構造、分析方法、原理與應用範疇。主要內容包括樣品處理、儀器分析原理、精密儀器分析原理、法規及標準檢驗法。

142070 Safe Animal Products Analysis and Quality Control 2 S **M. J. Lin, F**

This course will discuss the methods, principles, and applications of analytical instruments for safe animal products. The major contents conclude handling of samples, basic theory of analytical instruments, laws and regulation of analysis of animal products.

142071 食品與餐飲法規 2 選 朱定，上

本課程在於介紹現行各種有關於食品及餐飲法令，包括食品製造、食品管理、畜產相關法規及相關餐飲法規等有關法令，從法令施行偶生案例、現況等與學生共同探討，藉以充實法律常識、培育畜牧、食品加工及餐飲人具有專業及法律的完整人。

142071 Law and Regulation of Food and Foodservice Management 2 S , F

The objective of this course is to give the students the whole concept of laws and regulations of food and foodservice management, including laws and regulations related to food processing, food management, animal production, and foodservice management. The discussion will be in regard to the administration of current cases in order to give the students more common knowledge of administrative regulations.

142072 畜產品檢驗與分析 2 選 林美貞，上

本課程之設計主要在介紹正確的分析方法，儀器的正確使用，以減少分析結果之誤差，配合畜產品之品質檢查方法及配合畜產品製造流程之品管現代技術，內容包括：一般成分分析及精密儀器的基本操作、方法、原理和應用等。

142072, Analysis of Animal Products 2 S **M. J. Lin, F**

This course is designed to give the students to use the instruments correctly and accurately, to reduce the analytical error, to assist the students to understand the modern technique about the detection of the ingredients and the quality control of the formula feeds. The contents include basic operation of proximate composition analysis, and

methods, principles and applications of instrument analysis for animal products.

142073 畜產□檢驗與分析實習 1 選 林美貞，上

本實習課程主要是配合「畜產品檢驗與分析」課程，使學生實際進行所需要之操作訓練；其內容包括：實驗室的安全認識、採樣及分析基本訓練、畜產品各項分析的分析方法及儀器操作等。

142073 Animal Products Analysis Practice. 1 S **M. J. Lin, F**

This practice course is in associate with the course of analysis of animal products to provide the training to students on this technique. The contents include the safety of laboratory, sampling and basic operation of analysis, the methods that may be employed for the detection and determination of animal products.

142074 肉□□工 2 選 朴定，□

本課程介紹肉品加工有關技術之學理與所使用設備的原理。重點將著重於使學生瞭解各種加工技術，包括肉品之醃漬、嫩化、煙燻、乳化、乾燥、添加物使用與肉品保存等之原理與應用。

142074 Processing of Meat Products 2 S **, S**

This course introduces technologies related to meat processing and principles of the equipments and facilities related. The purpose of this course is educating students with knowledge include meat marination, tenderization, smoking, emulsion, drying, food additives addition, meat product preservation, and etc.

142075 肉□□工實習 1 選 朴定，□

本課程配合肉品加工技術之正課，使得學生能在瞭解肉品加工技術有關之原理及設備的功能外，更能實際正確地操作各項設備，以製作各項產品，包括：醃漬肉排、香腸、火腿、臘肉、貢丸、叉燒、油雞等。

142075 Meat Products Lab Practice 1 S **, S**

In this course, it educates students how to handling the meat processing equipments correctly. Moreover, students will apply these equipments to produce several meat products, including marinated chops, sausages, hams, Chinese bacon, Chinese meatball, BBQ pork, poultry products.

142076 乳□□工 2 選 林美貞，上

本課程講授乳之種類及成分、原料乳之品質、原料配合、加工原理、加工製程、品質管制及貯藏。乳製品種類包涵鮮乳、調味乳、乳粉、煉乳、發酵乳、冰淇淋、乾酪、乳酪及乳油。

142076 Processing of Dairy Products 2 S **M. J. Lin, S**

This course includes milk compositions, raw material quality, raw material recipes of dairy products, chemical changes of processing, processing scheme, quality control and storage. Major dairy products such as fresh milk, flavored milk, milk powder, concentrated milk, fermented milk, ice cream, cheese, butter and cream will be included.

142077 乳品加工實習 1 選 林美貞，上

本實習配合乳品技術之課程，使學生熟悉乳品之製程及品質控制。本次包括生乳及鮮乳檢驗、乳成分及微生物檢驗、鮮乳及調味乳製造、發酵乳製造、冰淇淋製造及乾酪製造。

142077 Dairy Processing Practice 1 S **M. J. Lin, S**

The objective of this course is to give students practical training on formula, processing and quality control of dairy products. It includes chemical, physical and microbial examinations of raw milk and dairy products, manufactures of fresh milk, flavored milk, fermented milk, ice cream and cheese.

142078 蛋品加工 2 選 斗定，上

本課程介紹蛋品加工有關技術之學理與所使用設備的原理。重點將著重於使學生瞭解各種加工技術，包括蛋品之濃縮、蒸煮、乾燥、酸鹼值改變、添加物使用與蛋品保存等之原理與應用。

142078 Processing of Egg Products 2 S **, S**

This course introduces technologies related to egg processing and principles of the equipments and facilities related. The purpose of this course is educating students with knowledge include condensation, steam cooking, drying, pH adjustment, food additives addition, egg product preservation, and etc.

142079 蛋品加工實習 1 選 斗定，上

本課程配合蛋品加工技術之正課，使得學生能在瞭解蛋品加工技術有關之原理及設備的功能外，更能實際正確地操作各項設備，以製作各項產品，包括：皮蛋、鹹蛋、蒸蛋、三色蛋、長蛋、滷蛋、焗蛋等。

142079 Egg Products Lab Practice. 1 S **, S**

In this course, it educates students how to handling the egg processing equipments correctly. Moreover, students will apply these equipments to produce several egg products, including preserved eggs, salty eggs, steaming eggs, three-colored eggs, long eggs and other egg products.

142080 膳食纖維在美容之應用 2 選 林美貞，下

本課程講授膳食纖維的特性及於美容食業之應用。課程內容包括美容食業及美容食品之介紹、膳食纖維原料及成分之特性、乳於美容食業之應用、各種膳食副產物原料及成分之特性、特殊成分之萃取與純化、膳食副產物於美容食業

之應用及相關法規。

142080 Application of Animal Products on Beauty Industry 2 S **M. J. Lin, S**

This course includes properties of animal products and their application in beauty industry. The content of this course includes the introduction of beauty industry, properties of animal products and ingredients, application of milk on beauty products, properties of animal by-products, extraction and purification of special ingredients, application of animal by-products ingredients, and related regulation.

142081 畜產企業實務實習 1 選 未定 ，上

爲落實畜產系學生對整體畜產經營實務之技術，藉以整合在校所學各科目之連貫性，鼓勵學生利用學期外之時間至產業界現場進行完整的經營實務訓練，而開設此一課程。本課程之安排，於事先經系務會議篩選具規模且經營上軌有制度之畜產企業單位，包括公、民營機構，雙方取得共識，安排必要之實習項目與進度，於寒、暑假期間，共實習 30 日，完成預定進度，繳交報告，並經實習單位及系主任共同考核合格者，始給予學分。

142081 Practice of Livestock Enterprises 1 S **, F**

This course is designed to offer the students a link to the livestock industry and to enforce their ability in operating an integrate livestock production unit. Students in this course will be appointed to some selected enterprises or companies with livestock production units during summer or winter vacations for 30 days of training program. Students who complete the practical training program with writing reports and pass the evaluation by both the department and the counterpart will be granted the credits.