**熱帶農業暨國際合作 系(所) 碩士班 課程與核心能力之關聯檢核表**

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| **核心能力****Core Capabilities** | **能力指標與核心素養****Capabilities Index and** **Core Accomplishment** | **對應課程****Related Courses** | **檢核機制****Evaluation** |
| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 1.具資訊處理編排能力。Demonstrate organization and handling of information.2.具危機思考能力。Demonstrate critical thinking3.團隊合作。Demonstrate teamwork4. 培養生物學技術。Develop skills in biological theory.5. 培養生物學技術。Develop skills in biological theory.6.具備食品微生物及化學能力Demonstrate microorganisms and chemical ability 7.具食品機械操作知識Operate food machinery knowledge | 1.專題討論 Seminar2.生物技術特論Advanced Biotechnology3.食品科技研究法Methodology for Food Research4.高等食品化學Advanced Food Chemistry5.高等食品生物化學Advanced Food Biochemistry6.食品經營特論Special Topics on Food Management7. Global Seminar8. 碩士論文 Thesis9. 全球研討會Global Seminar10. 溝通技巧Communication Skills11. 訊息傳遞Signal Transduction12. 植物生物化學Plant Biochemistry13. 應用微生物學Applied Microbiology14. 食品製程之自動控制Automatic Control in Food Processing15. 最適化在食品科技之應用Optimization in Food Science and Technology16. 微生物生理與代謝Microbial Physiology and Metabolism17. 生化工程Biochemical Engineering18. 高等食品工程Advanced Food Engineering19. 高等食品加工Advanced Food Processing20.食品機械特論Special Topics on Food Machinery21.專題研究Special Research Project22. 食品工程特論Special Topics in Food Engineering23. 獨立研究Independent Studies24. 數量方法Quantitative Methods25. 農企業行銷管理專題Seminar on Marketing Management of Agribusiness26. 談判與溝通Negotiating Strategies and Tactics for Business27. 大數據分析與應用Big Data Analysis and Applications | 1.口頭發表Oral Presentations2.筆試 Written Exams |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 1.具計畫規劃及專業發展。Demonstrate Program Planning Skills and Professional Development2.具科學儀器控制、理論證實及實做知識。Operate scientific equipment and demonstrate theory & practical knowledge3.具危機及創造思考力。Demonstrate critical and creative thinking 4. 具備食品微生物及化學能力技術Demonstrate microorganisms and chemical ability skill5. 具食品機械操作能力Operate food machinery ability6. 具食品經營、行銷及電腦化技術Demonstrate food management, marketing and computerization skill | 1.永續農業發展與規劃Development and Planning in Sustainable Agriculture2.科學研究方法Scientific Research Methods3.專題研究Special Research Project4.生物技術研究法Biotechnology Laboratory5.食品科技研究法Methodology for Food Research6.食品管理特論 Special Topics on Food Management7.專題討論 Seminar8.碩士論文 Thesis9. 全球研討會Global Seminar10. 溝通技巧Communication Skills11. 訊息傳遞Signal Transduction12. 植物生物化學Plant Biochemistry13. 應用微生物學Applied Microbiology14. 高等食品生物化學Advanced Food Biochemistry15. 食品製程之自動控制Automatic Control in Food Processing16. 最適化在食品科技之應用Optimization in Food Science and Technology17. 微生物生理與代謝Microbial Physiology and Metabolism18. 生化工程Biochemical Engineering19. 高等食品工程Advanced Food Engineering20. 高等食品加工Advanced Food Processing21. 食品機械特論Special Topics on Food Machinery22. 高等食品化學Advanced Food Chemistry23. 生物技術特論Advanced Biotechnology24. 機能性食品Functional Foods25. 食品工程特論Special Topics in Food Engineering26. 獨立研究Independent Studies27. 數量方法Quantitative Methods28. 農企業行銷管理專題Seminar on Marketing Management of Agribusiness29. 談判與溝通Negotiating Strategies and Tactics for Business | 1.筆試及口頭發表Written and Oral examinations2.口頭發表 Oral Presentations  |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. | 1.具參與研究及教育技能。Demonstrate participatory research and education Skills2.具討論及危機思考能力。Demonstrate debate and critical thinking skills 3. 具食品經營、行銷及電腦化技術能力Demonstrate food management, marketing and computerization ability | 1.專題討論 Seminar2.全球研討會 Global Seminar3.專題研究 Special Research Project4.溝通技巧Communication Skills5. 農企業行銷管理專題Seminar on Marketing Management of Agribusiness | 1.筆試及口頭發表 Written and Oral examinations2.口頭發表 Oral Presentations |

 **熱帶農業暨國際合作 系(所) 碩士班 課程與核心能力之關聯檢核表**

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| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 具備統計觀念及資料分析能力，並應用於農業生產與行銷。Demonstration of ability to apply the knowledge of research methods, experimental design for data collection, data analysis and interpretation in tropical agriculture production, management and marketing.  | 1.試驗設計及數據分析Experimental Design and Data Analysis 2.農業研究方法Agriculture Research Methods3.行銷管理專題Special Topics on Marketing Management4.統計取樣法Sampling methods5. 供應鏈管理Supply Chain Management6. 計畫評估與管理Project Appraised and Management7. 大數據分析與應用Big Data Analysis and Applications | 筆試Written exams |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 具備收集彙整研究資料，應用試驗設計、天然物分析、及電顯分析之技術於研究計畫中，並對分析資料結果，達成協助執行計劃之能力。Demonstration of the ability of using the knowledge of experimental design, sampling techniques, statistical analysis, electron microscopy and nature products analysis to assist agriculture researches in different disciplines .  | 1.農業研究方法Agriculture Research Methods2.試驗設計與數據分析Experimental design and data analysis.3.統計取樣法Sampling methods4.電顯技術Electron microscopy5.天然物特論Special topics of nature products6.試驗設計及數據分析Experimental Design and Data Analysis7. 供應鏈管理Supply Chain Management8. 計畫評估與管理Project Appraised and Management9. 大數據分析與應用Big Data Analysis and Applications | 筆試Written exams |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. | 1.具備以英文設計試驗，分析資料。2.具備以英文進行天然物與電顯相關技術支援計劃之能力Demonstration of the ability to use English to communicate or exchange research information with other professionals in an international project.  | 1.農業研究方法Agriculture Research Methods 2.試驗設計與數據分析Experimental design and data analysis.3.統計取樣法Sampling methods4.電顯技術Electron microscopy5.天然物特論Special topics of nature products6. 試驗設計及數據分析Experimental Design and Data Analysis7. 計畫評估與管理Project Appraised and Management8. 大數據分析與應用Big Data Analysis and Applications | 筆試皆以英文進行Exams are all in English. |

 **熱帶農業暨國際合作 系(所) 碩士班 課程與核心能力之關聯檢核表**

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| **核心能力****Core Capabilities** | **能力指標與核心素養****Capabilities Index and** **Core Accomplishment** | **對應課程****Related Courses** | **檢核機制****Evaluation** |
| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 1.具備無機元素影響作物生育之相關知識Knowledge of plant mineral nutrition and effect on crop growth and development2.具備生物物理及生物化學在植物生理及生態上應用之知識Knowledge of applications of physicochemical and environmental science on plant physiology3.具備永續農業規劃、管理及發展之知識Knowledge of sustainable agriculture: preparation, management, and development 4. 具備農園藝作物量產技術之能力Demonstration of the ability to mass propagate agricultural and horticultural crops | 1.高等植物營養學Advanced Plant Nutrition2.植物環控生理學Controlled Environment PlantPhysiolog3.永續農業發展與規劃Development and planning in Sustainable Agriculture4. 熱帶農業生態Tropical Agriculture Ecology5. 農業發展核心競爭力策略規劃Competitive Strategy and Core Planning in Agricultural Development6. 生物防治特論Special Topics on Biological Control7. 農業技術轉移Agriculture Technology Transfers8. 高等植物組織培養學Advanced Plant Tissue Culture Techniques9. 天然物特論Special Topics on Natural Products10. 高等作物學Advanced Crop Science11. 草坪生理及管理Turf Physiology and Management12. 植物種原保存Plant Germplasm Conservation | 1.課堂答問 A＆Q in the class2.筆試 Paper test3.報告 Report4.實際操作 Practice  |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 1.具備協助執行科技計畫所需之植物營養、植物環控生理及永續農業等相關知識Knowledge and ability to participate in scientific research projects in plant nutrition, controlled environment plant physiology, and sustainable agriculture related fields2. 具備農園藝作物周年生產的能力Demonstration of the ability to conduct year-round production of agricultural and horticultural crops | 1.高等植物營養學Advanced Plant Nutrition2.植物環控生理學Controlled Environment PlantPhysiology3.永續農業發展與規劃Development and planning in Sustainable Agriculture4.熱帶農業生態Tropical Agriculture Ecology5.農業發展核心競爭力策略規劃Competitive Strategy and Core Planning in Agricultural Development6. 生物防治特論Special Topics on Biological Control7. 農業技術轉移Agriculture Technology Transfers8. 天然物特論Special Topics on Natural Products9. 高等植物組織培養學Advanced plant tissue culture techniques10. 高等作物學Advanced Crop Science11. 植物種原保存Plant Germplasm Conservation | 1.課堂答問 A＆Q in the class2.筆試 Paper test3.報告 Report4.實際操作 Practice |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. | 1.具備參與國際合作計畫所需之植物營養學、植物環控生理學知識及永續農業規劃、管理能力Capability to engage in international projects and contribute knowledge in plant nutrition, controlled environment plant physiology, and sustainable agriculture | 1.高等植物營養學Advanced Plant Nutrition2.植物環控生理學Controlled Environment PlantPhysiology3.永續農業發展與規劃Development and planning in Sustainable Agriculture4.天然物特論Special Topics on Natural Products5. 農業發展核心競爭力策略規劃Competitive Strategy and Core Planning in Agricultural Development | 1.課堂答問 A＆Q in the class2.筆試 Paper test3.報告 Report4.實際操作 Practice  |

 **熱帶農業暨國際合作 系(所) 碩士班 課程與核心能力之關聯檢核表**

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| **核心能力****Core Capabilities** | **能力指標與核心素養****Capabilities Index and****Core Accomplishment** | **對應課程****Related Courses** | **檢核機制****Evaluation** |
| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 1.訓練研究生資料蒐集、整理及表達的能力。Demonstration of basic knowledge of collecting research information and data, and ability of presentation.2.使學生具備對土地改革政策和以農業為經濟發展之軸心之認知。Demonstration of basic knowledge of land reform policies and agriculture serving as the engine for national economic development.3.使學生具備個體經濟學理論之知識。Demonstration of basic knowledge of microeconomic theories.4.使學生具備基本財務觀念及管理技能。Demonstration of basic knowledge of financial management and management skills.5.使學生具備行銷理念及知識。Demonstration of basic knowledge and concepts of marketing. | 1.[專題討論](http://140.127.31.17/moodle/course/view.php?id=29135) Seminar2.農業發展與國際合作特論Special Topics on Agricultural Development and International Cooperation3.個體經濟特論Special Topics on Microeconomics4.農企業管理特論Special Topics on Agribusiness Management5.行銷管理專題Special Topics on Marketing Management6. 農企業財務管理Financial Management of Agribusiness7. 農企業人力資源管理Human Resources Management of Agribusiness8. 農企業投資分析Agribusiness Investment Analysis9. 區域經濟與政策分析Regional Economics and Policy Analysis10. 農業發展與政策Agricultural Development and Policy11. 農民組織專題Seminar on Farmers’ Organization | 1.上台報告及繳交書面報告檢視學生彙整相關資料的能力Evaluation by both oral and written reports to ensure students’ ability of collecting and integrating information.2.作業指派及進行筆試檢視學生應具備的基礎知識Evaluation by homework assignments and comprehensive exam. to ensure students’ ability of comprehension.3.個案討論檢視學生應用知識之能力Evaluation by case studies to ensure student’s ability of applying knowledge and theories. |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 1.訓練資料收集及彙整的能力，並能將資料應用在研究計畫上的能力。Demonstration of ability of collecting research information and data, and applying knowledge in assisting research projects.2.使學生具備對土地改革政策和以農業為經濟發展之軸心的認知，以及訓練配合各種農業政策來協助研究計劃的能力。Demonstration of knowledge of land reform policies and agriculture serving as the engine for national economic development, and ability of applying knowledge in assisting research projects.3.使學生具備個體經濟學理論之知識，並能實際應用的能力。Demonstration of knowledge of microeconomic theories, and ability of applying knowledge in assisting research projects.4.使學生具備財務觀念及管理技能，且具備在農企業上實際應用的能力。Demonstration of knowledge of financial management and management skills, and ability of applying knowledge in assisting research projects.5.使學生具備行銷理念及知識，並具備協助執行行銷計畫，解決行銷問題的能力。Demonstration of knowledge and concepts of marketing, and ability of applying knowledge in assisting research projects. | 1.[專題討論](http://140.127.31.17/moodle/course/view.php?id=29135)Seminar2.農業發展與國際合作特論Special Topics on Agricultural Development and International Cooperation3.個體經濟特論Special Topics on Microeconomics4.農企業管理特論Special Topics on Agribusiness Management5.行銷管理專題Special Topics on Marketing Management6. 農企業財務管理Financial Management of Agribusiness7. 農企業人力資源管理Human Resources Management of Agribusiness8. 農企業投資分析Agribusiness Investment Analysis9. 區域經濟與政策分析Regional Economics and Policy Analysis10. 應用華語（1）Applied Mandarin (1)11. 應用華語（2）Applied Mandarin (2)12.農業發展與政策Agricultural Development and Policy13. 農民組織專題Seminar on Farmers’ Organization14. 大數據分析與應用Big Data Analysis and Applications | 1.上台報告及繳交書面報告檢視學生彙整相關資料的能力Evaluation by both oral and written reports to ensure students’ ability of collecting and integrating information.2.作業指派及進行筆試檢視學生應具備的基礎知識Evaluation by homework assignments and comprehensive exam. to ensure students’ ability of comprehension.3.個案討論檢視學生應用知識之能力Evaluation by case studies to ensure student’s ability of applying knowledge and theories. |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. | 1.以英文上課因此具備參與國際合作計畫之能力。Courses are taught in English to ensure the communication ability to participate in international cooperation projects2.培養對土地改革政策和以農業為主之經濟發展的認知，以及具備配合農業升級及回饋國際社會政策下推展各項國際合作計畫的能力。Demonstration of knowledge of land reform policies and agriculture serving as the engine for national economic development, and ability of applying knowledge in participating in international cooperation projects and related work.3.使學生具備個體經濟學理論各個理論，並能實際應用在國際合作計劃及相關工作的能力。Demonstration of knowledge of microeconomic theories, and ability of applying knowledge in participating in international cooperation projects and related work.4.使學生具備基本財務觀念及管理技能，且具備在農企業管理及國際合作各種計劃實際應用的能力。Demonstration of knowledge of financial management and management skills, and ability of applying knowledge in participating in international cooperation projects and related work.5.使學生具備行銷理念及知識，並能策劃行銷計畫，解決行銷上問題的能力，且應用在國際合作計畫上的能力。 | 1.[專題討論](http://140.127.31.17/moodle/course/view.php?id=29135)Seminar2.農業發展與國際合作特論Special Topics on Agricultural Development and International Cooperation3.個體經濟特論Special Topics on Microeconomics4.農企業管理特論Special Topics on Agribusiness Management5.行銷管理專題Special Topics on Marketing Management6. 農企業投資分析Agribusiness Investment Analysis7. 區域經濟與政策分析Regional Economics and Policy Analysis8. 農業發展與政策Agricultural Development and Policy | 1.上台報告及繳交書面報告檢視學生彙整相關資料的能力Evaluation by both oral and written reports to ensure students’ ability of collecting and integrating information.2.作業指派及進行筆試檢視學生應具備的基礎知識Evaluation by homework assignments and comprehensive exam. to ensure students’ ability of comprehension.3.個案討論檢視學生應用知識之能力Evaluation by case studies to ensure student’s ability of applying knowledge and theories.4.以英文進行檢核學生學習成效All evaluations are conducted in English. |

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| **核心能力****Core Capabilities** | **能力指標與核心素養****Capabilities Index and** **Core Accomplishment** | **對應課程****Related Courses** | **檢核機制** **Evaluation** |
| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 1.具備分離、培養及保存動物細之能力With the ability to isolate, culture and preserve animal cells2.具備免疫知能及預防疾病發生之能力With the knowledge of immunity and the ability to prevent disease outbreak.3.具備國際養殖現況知能With the knowledge of current status of international aquaculture4.具備家禽類知識能力Demonstration on poultry knowledge ability 5. 具備漁業、家禽及家畜養殖知識能力Demonstration on ability to fishery, poultry, and livestock feeding6. 具備分子與基因知識With the knowledge of molecular and genes | 1.動物細胞培養Animal Cell Culture2.進階免疫學Advanced Immunology3.國際漁業合作特論Special Topics on International Fishery Cooperation4.魚類疫苗學**Fish Vaccinology****5.**家禽學特論Special Topics on Poultry Management6.乳牛學特論Special Topics on Dairy Cattle Management7. 動物幹細胞建立與應用特論Special Topics on Application and Establishment of Embryonic Stem Cells8.魚類學特論Special Topics on Ichthyology9.新魚種養殖特論Special Topics on New Fish Species Culture10.甲殼類生理學Special Topics on Crustacean Physiology11.無脊椎動物免疫學Invertebrate Immunology12.海洋生物技術特論Special Topics on Marine Biotechnology13.家畜營養生理Animal Nutritional Physiology14. 草食動物營養特論Special Topics on Nutrition for Herbivores15. 高環境溫度與禽畜生產High Temperature and Animal Production16. 實用畜產自動化特論Special Topics on Application of Animal Products Automation17. 熱帶畜牧特論Special Topics on Tropical Livestock Production18. 畜產污染防治與資源利用Livestock Pollution Control and Resource Utilization19. 畜舍策劃特論Special Topics on Animal House Arrangement20. 細胞生物學特論Special Topics in Cell Biology21. 家畜繁殖管理特論Special Topics on Livestock Reproductive Management22. 生殖技術特論Special Topics on Reproductive Technology23. 應用動物育種技術Applied Animal Breeding Technology24. 牛應用行為學Applied Cattle Behavior25. 乳品加工特論Special Topics on Milk Products Processing26. 肉品加工特論Special Topics on Meat Products Processing27. 動物代謝調節Animal Metabolic Regulation28. 飼料技術特論Special Topics on Feed Manufacture Technology29. 安全畜產品生產特論Special Topics on Safe Animal Production30. 動物行為和福利Animal Behavior and Welfare31. 蛋品加工特論Special Topics on Egg Products Processing32. 泌乳生理學Physiology of Lactation33. 數量遺傳與動物模式論Quantitative Genetics and Animal Model Methodology34. 禽畜副產物利用Utilization of Animal and Poultry35. 動物基因轉殖特論Special Topics on Animal Transgenics36. 基因調控Gene Regulation37. 免疫學概論38. 免疫學特論Special Topics on Immunology39. 分子病毒學Molecular Virology | 1.進行筆試檢視學生應具備的基本知識Paper test for the knowledge2.繳交書面報告檢視學生彙整相關資料能力Evaluate term paper or final report students submitted3.現場實際操作檢視學生繁養殖技術能力Evaluate the techniques students learned in field |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 1.具備漁業、家禽及家畜養殖及管理技術With fishery, poultry and livestock feeding techniques and management2. 具備疫苗相關知識與技能With the knowledge and ability of vaccine on fish and adjunvats3. 團隊合作Demonstrate team work. | 1.國際漁業合作特論Special Topics on International Fishery Cooperation2.魚類疫苗學 **Fish Vaccinology**3.家禽學特論Special Topics on Poultry Management4.乳牛學特論Special Topics on Dairy Cattle Management5. 動物幹細胞建立與應用特論Special Topics on Application and Establishment of Embryonic Stem Cells6. 魚類學特論Special Topics on Ichthyology7. 新魚種養殖特論Special Topics on New Fish Species Culture8.甲殼類生理學Special Topics on Crustacean Physiology9. 無脊椎動物免疫學Invertebrate Immunology10. 海洋生物技術特論Special Topics on Marine Biotechnology11. 家畜營養生理Animal Nutritional Physiology12. 草食動物營養特論Special Topics on Nutrition for Herbivores13. 高環境溫度與禽畜生產High Temperature and Animal Production14. 實用畜產自動化特論Special Topics on Application of Animal Products Automation15. 熱帶畜牧特論Special Topics on Tropical Livestock Production16. 畜產污染防治與資源利用Livestock Pollution Control and Resource Utilization17. 畜舍策劃特論Special Topics on Animal House Arrangement18. 細胞生物學特論Special Topics in Cell Biology19. 家畜繁殖管理特論Special Topics on Livestock Reproductive Management20. 生殖技術特論Special Topics on Reproductive Technology21. 應用動物育種技術Applied Animal Breeding Technology22. 牛應用行為學Applied Cattle Behavior23. 乳品加工特論Special Topics on Milk Products Processing24. 肉品加工特論Special Topics on Meat Products Processing25. 動物代謝調節Animal Metabolic Regulation26. 飼料技術特論Special Topics on Feed Manufacture Technology27. 安全畜產品生產特論Special Topics on Safe Animal Production28. 動物行為和福利Animal Behavior and Welfare29. 蛋品加工特論Special Topics on Egg Products Processing30. 泌乳生理學Physiology of Lactation31. 數量遺傳與動物模式論Quantitative Genetics and Animal Model Methodology32. 禽畜副產物利用Utilization of Animal and Poultry33. 動物基因轉殖特論Special Topics on Animal Transgenics34. 基因調控Gene Regulation35. 疫苗佐劑學36. 進階免疫學Advanced Immunology37. 酵素與蛋白質工程學38.免疫學概論39. 疫苗工程學Vaccine Engineering40. 免疫學特論Special Topics on Immunology41. 分子病毒學Molecular Virology |  |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. | 1.具備以英文執行國際合作計劃之能力。Demonstration of the ability to use English proficiently in R&D, planning and executing international cooperation projects. | 1. 疫苗佐劑學

Vaccine Adjunvats2. 進階免疫學Advanced Immunology3. 酵素與蛋白質工程學4. 免疫學概論5.疫苗工程學Vaccine Engineering6. 免疫學特論Special Topics on Immunology |  |

 **熱帶農業暨國際合作 系(所) 碩士班 課程與核心能力之關聯檢核表**

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| **核心能力****Core Capabilities** | **能力指標與核心素養****Capabilities Index and** **Core Accomplishment**  | **對應課程****Related Courses** | **檢核機制****Evaluation** |
| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 1.具備基本地理資訊系統相關之能力。Demonstration of basic knowledge of GIS. 2.具備基本林產製造知識。Demonstration of basic knowledge of forest products. | 1.林產特論Special Topics on Forest Products2. 木材微生物學Wood Microbiology3. 地理資訊系統Geographic Information Systems4. 中國園林藝術特論Special Topics on Chinese Garden Arts5. 文化景觀特論Special Topics on Culture Landscape6. 景觀建築與風水特論Special Topics on Landscape Architecture and Feng-Shui7. 造園設計特論Special Topics on landscape Design8. 景觀植栽Landscape Plantation9. 景觀規劃特論Special Topics on Landscape Planning10. 土地開發與管制Land Development and Control11. 休閒農業Leisure Agriculture12. 生態環境規劃Ecological Environment Planning | 進行筆試與實際操作評估Evaluation by written exam and field exam. |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 具備應用地理資訊系統或林產之專業知能於相關農業生產。Demonstration of professional ability to apply GIS or forest knowledge in agricultural practice.  | 1.林產特論 Special Topics on Forest Products2.木材微生物學Wood Microbiology3.地理資訊系統Geographic Information Systems4. 中國園林藝術特論Special Topics on Chinese Garden Arts5. 文化景觀特論Special Topics on Culture Landscape6. 景觀建築與風水特論Special Topics on Landscape Architecture and Feng-Shui7. 造園設計特論Special Topics on landscape Design8. 景觀植栽Landscape Plantation9. 景觀規劃特論Special Topics on Landscape Planning10. 土地開發與管制Land Development and Control11. 休閒農業Leisure Agriculture12. 生態環境規劃Ecological Environment Planning | 進行筆試與實際操作評估Evaluation by written exam and field exam. |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. |  |  |  |

**熱帶農業暨國際合作 系(所) 碩士班 課程與核心能力之關聯檢核表**

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| **核心能力****Core Capabilities** | **能力指標與核心素養****Capabilities Index and** **Core Accomplishment** | **對應課程****Related Courses** | **檢核機制** **Evaluation** |
| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 1.具備農業動植物專業研究與管理所需之統計分析與設計研究之能力。Demonstration of professional knowledge in statistical analysis and experimental design for managing R&D and animal or plant productions.2.具備儀器操作技術Operate to equipment skills | 1.高等生物材料顯微鏡學Advanced Microscopy on Biological Materials2.農業研究資訊Agricultural Research Information3. 休閒研究方法論Research Methods in Leisure Studies | 筆試Written exams |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 具備獨立設計科學試驗，並分析資數之能力。Demonstration of professionally knowledge in statistical analysis and experimental design to conduct and scientific research independently and innovatively..  | 1.高等生物材料顯微鏡學Advanced Microscopy on Biological Materials2.農業研究資訊Agricultural Research Information3. 休閒研究方法論Research Methods in Leisure Studies | 筆試Written exams |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. | 具備以英文規劃執行國際合作計劃之能力。Demonstration of the ability to use English proficiently in R&D, planning and executing international cooperation projects. | 1.農業研究方法與試驗設計Agriculture research method and experimental design.2.試驗設計與數據分析Experimental design and data analysis | 筆試皆以英文進行Exams are all in English. |

 **熱帶農業暨國際合作 系(所) 碩士班 課程與核心能力之關聯檢核表**

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| **核心能力****Core Capabilities** | **能力指標與核心素養****Capabilities Index and** **Core Accomplishment**  | **對應課程****Related Courses** | **檢核機制****Evaluation** |
| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 1.具用水灌溉及水土保持工程能力Demonstration of the ability to irrigation and soil reservation engineering2. 具土壤相關知識With soil related knowledge | 1.作物需水量Crop Water Requirements2.灌溉方法Irrigation Methods3.排水工程Drainage Engineering4. 農企業資源規劃管理專題 | 1.進行筆試檢視學生學習成效Classroom examination to evaluate the learning performance of the students |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 1.具用水灌溉及水土保持工程技能Demonstration of the ability to irrigation and soil reservation engineering skill2. 具土壤相關知識With soil related knowledge3. 具備氣候資料調查與分析技術Demonstration on climatic data investigation and analysis skill | 1.作物需水量Crop Water Requirements2.灌溉方法Irrigation Methods3.排水工程Drainage Engineering4土壤力學行為5. 作物需水量專題6. 土木科技英文I7. 土木科技英文II8. 排水專題9. 灌溉專題10. 輸砂研究11土木科技英文III12. 科技英文寫作13. 土壤沖蝕14. 最佳化應用15. 地理資訊系統16. 蛋白質體學17. 國際農產品市場專題18. 農企業資源規劃管理專題19. 食品科技研究法20. 高等食品加工21. 全球食品科技與產業概論22. 食品酵素應用特論23. 食品化學特論24. 活性天然物特論25. 水文統計 | 2.實地操作檢視學生庭園設計與施工之能力Field practice to evaluate the ability of the students to design and construct gardens. |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. | 1. 具備水土保持工程能力及土壤概念

Demonstration of the ability to soil reservation engineering and soil concept1. 具備氣候資料調查與分析技術

Demonstration on climatic data investigation and analysis skill | 1. 土壤力學行為2. 作物需水量專題3. 排水專題4. 灌溉專題5. 輸砂研究6. 科技英文寫作7. 土壤沖蝕8. 最佳化應用9. 地理資訊系統10. 蛋白質體學11. 國際農產品市場專題11. 農企業資源規劃管理專題12. 水文統計 |  |

 **熱帶農業暨國際合作 系(所) 碩士班 課程與核心能力之關聯檢核表**

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| **核心能力****Core Capabilities** | **能力指標與核心素養****Capabilities Index and Core Accomplishment**  | **對應課程****Related Courses** | **檢核機制****Evaluation** |
| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 1.具備基因知識With the knowledge of genes2.具備染色體遺傳分析能力Able to analyze chromosome genetics  | 高等分子生物學Advanced Molecular Biology分子營養學Molecular Nutrition分子生物學Molecular Biology | 1.進行筆試檢視學生應具備的基本知識Paper test for the knowledge2.繳交書面報告檢視學生彙整相關資料能力Evaluate term paper or final report students submitted |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 1. 具備分生實作經驗

With the experience on holding experiment | 高等分子生物學Advanced Molecular Biology分子營養學Molecular Nutrition分子生物學Molecular Biology | 1.筆試Paper test2.報告Report3.實際操作Practice |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. |  |  |  |

 **熱帶農業暨國際合作 系(所) 碩士班 課程與核心能力之關聯檢核表**

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| **核心能力****Core Capabilities** | **能力指標與核心素養****Capabilities Index and** **Core Accomplishment**  | **對應課程****Related Courses** | **檢核機制****Evaluation** |
| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 1.認知世界農糧食作物生產情形、供需概況及未來展望Knowledge of world crop production, food supply and demand, and the future development2.認識農業歷史、農藝作物特徵、生育情形、生產方式及生態角色Understanding the development of agriculture, botany of food crops, crop growth and improvement, and agroecosystems3.具備栽種一般農藝作物及園藝作物之基本技能Ability to grow general agronomic and horticultural crops4.認識各種作物、生產系統及影響作物之環境因子Knowledge of basic principles of crop science: science of crop plants and soil, development of crop production, and environmental factors affecting crops5.具備栽種糧食作物之基本技能Ability to cultivate food crops 6.具備作物育種之基本技能 Ability to breed crops  | 1.高等作物育種學Advanced Crop Breeding2. 種子科學與技術Seed Science and Technology3. 熱帶作物生理學Tropical Crop Physiology4. 植物逆境生理Stress Physiology of Plants5. 果樹生理特論Special Topics on Fruit CropPhysiology6. 高等果樹學Advanced Pomology7. 高等蔬菜學Advanced Olericulture8. 高等花卉學Advanced Floriculture9. 高等園產品處理Advanced Postharvest Technology of Horticultural Crops10. 熱帶農業和生物多樣性Tropical Agriculture and Biodiversity11. 園藝產品經營專題Seminar on Managing Business of Horticultural Products12. 畜水產品經營專題Seminar on Animal Enterprises Management13. 糧食安全Food Security | 1.課堂答問A＆Q in the class2.筆試Paper test3.報告Report4.實際操作Practice |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 1.認識作物營養失調症狀、診斷技術、管理原則與改善方法。Knowledge of nutrient disorder symptoms of crops, analysis technique, managing and improving methods. 2.具備診斷及改善作物營養失調症狀之技能Ability to identify and improve crop nutrition problems | 1.高等作物育種學Advanced Crop Breeding2. 熱帶作物生理學Tropical Crop Physiology3. 植物逆境生理Stress Physiology of Plants4. 果樹生理特論Special Topics on Fruit CropPhysiology5. 高等果樹學Advanced Pomology6. 高等蔬菜學Advanced Olericulture7. 高等花卉學Advanced Floriculture8. 高等園產品處理Advanced Postharvest Technology of Horticultural Crops9. 熱帶農業和生物多樣性Tropical Agriculture and Biodiversity11. 園藝產品經營專題Seminar on Managing Business of Horticultural Products12. 畜水產品經營專題Seminar on Animal Enterprises Management13. 糧食安全Food Security | 1.課堂答問 A＆Q in the class2.筆試 Paper test3.報告 Report4.實際操作 Practice  |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. |  |  |   |

 **熱帶農業暨國際合作 系(所) 碩士班 課程與核心能力之關聯檢核表**

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| **核心能力****Core Capabilities** | **能力指標與核心素養****Capabilities Index and** **Core Accomplishment**  | **對應課程****Related Courses** | **檢核機制****Evaluation** |
| 1. 具熱帶農業動物或植物生產與行銷之知識與技能。Demonstration of knowledge and problem-solving abilities in tropical agriculture; animal and plant production management, and marketing.  | 1.認知世界農糧食作物生產情形、供需概況及未來展望Knowledge of world crop production, food supply and demand, and the future development2.認識農業歷史、農藝作物特徵、生育情形、生產方式及生態角色Understanding the development of agriculture, botany of food crops, crop growth and improvement, and agroecosystems3.具備栽種一般農藝作物及園藝作物之基本技能Ability to grow general agronomic and horticultural crops4.認識各種作物、生產系統及影響作物之環境因子Knowledge of basic principles of crop science: science of crop plants and soil, development of crop production, and environmental factors affecting crops5.具備栽種糧食作物之基本技能Ability to cultivate food cropsfunctions, and relationships with crop plants6.具備昆蟲、病蟲害、農藥使用知識With the basic knowledge of insect, disease and pesticides  | 1. 植物病原學特論Special Topics on Plant Pathogens 2. 高等昆蟲學Advanced Entomology3. 植物病害防治特論Special Topics on Plant Diseases Control4. 有害生物綜合管理特論Special Topics on Integrated Pest Management5. 高等植物病理學Advanced Plant Pathology6. 熱帶植物病害特論Special Topics on Tropical PlantDiseases7. 熱帶植物蟲害特論Special Topics on Tropical InsectPests8. 昆蟲生態學特論Special Topics on Insect Ecology9. 農藥學特論Special Topics on Pesticides10. 高等藥理學Advanced Pharmacology | 1.課堂答問A＆Q in the class2.筆試Paper test3.報告Report4.實際操作Practice |
| 2. 具協助執行科技研究計畫之知識與技能。Demonstration of the application of Agricultural sciences and agribusiness management research methods. | 1.認識作物營養失調症狀、診斷技術、管理原則與改善方法。Knowledge of nutrient disorder symptoms of crops, analysis technique, managing and improving methods. 2.具備診斷及改善作物營養失調症狀之技能Ability to identify and improve crop nutrition problems3.具備昆蟲、病蟲害、農藥使用技術With the basic knowledge of insect, disease and pesticides techniques | 1.植物病原學特論Special Topics on Plant Pathogens 2.高等昆蟲學Advanced Entomology3.植物病害防治特論Special Topics on Plant Diseases Control4.有害生物綜合管理特論Special Topics on Integrated Pest Management5.高等植物病理學Advanced Plant Pathology6.熱帶植物病害特論Special Topics on Tropical Plant Diseases7.熱帶植物蟲害特論Special Topics on Tropical Insect Pests8.昆蟲生態學特論Special Topics on Insect Ecology9.農藥學特論Special Topics on Pesticides10.高等藥理學Advanced Pharmacology | 1.課堂答問 A＆Q in the class2.筆試 Paper test3.報告 Report4.實際操作 Practice  |
| 3. 具參與國際合作計畫與相關工作之能力。Demonstration of the ability to plan and execute international cooperation related research projects in food, forestry, fishery, horticulture, animal husbandry, and rural and agribusiness management related researches. |  |  |  |