**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 thinking  3.團隊合作。  Demonstrate teamwork  4. 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  Seminar  2.生物技術特論  Advanced Biotechnology  3.食品科技研究法  Methodology for Food Research  4.高等食品化學  Advanced Food Chemistry  5.高等食品生物化學  Advanced Food Biochemistry  6.食品經營特論  Special Topics on Food Management  7. Global Seminar  8. 碩士論文  Thesis  9. 全球研討會  Global Seminar  10. 溝通技巧  Communication Skills  11. 訊息傳遞  Signal Transduction  12. 植物生物化學  Plant Biochemistry  13. 應用微生物學  Applied Microbiology  14. 食品製程之自動控制  Automatic Control in Food Processing  15. 最適化在食品科技之應用  Optimization in Food Science and Technology  16. 微生物生理與代謝  Microbial Physiology and Metabolism  17. 生化工程  Biochemical Engineering  18. 高等食品工程  Advanced Food Engineering  19. 高等食品加工  Advanced Food Processing  20.食品機械特論  Special Topics on Food Machinery  21.專題研究  Special Research Project  22. 食品工程特論  Special Topics in Food Engineering  23. 獨立研究  Independent Studies  24. 數量方法  Quantitative Methods  25. 農企業行銷管理專題  Seminar on Marketing Management of Agribusiness  26. 談判與溝通  Negotiating Strategies and Tactics for Business  27. 大數據分析與應用  Big Data Analysis and Applications | 1.口頭發表  Oral Presentations  2.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 Development  2.具科學儀器控制、理論證實及實做知識。  Operate scientific equipment and demonstrate theory & practical knowledge  3.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 skill  5. 具食品機械操作能力  Operate food machinery ability  6. 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 Agriculture  2.科學研究方法  Scientific Research Methods  3.專題研究  Special Research Project  4.生物技術研究法  Biotechnology Laboratory  5.食品科技研究法  Methodology for Food Research  6.食品管理特論  Special Topics on Food Management  7.專題討論  Seminar  8.碩士論文  Thesis  9. 全球研討會  Global Seminar  10. 溝通技巧  Communication Skills  11. 訊息傳遞  Signal Transduction  12. 植物生物化學  Plant Biochemistry  13. 應用微生物學  Applied Microbiology  14. 高等食品生物化學  Advanced Food Biochemistry  15. 食品製程之自動控制  Automatic Control in Food Processing  16. 最適化在食品科技之應用  Optimization in Food Science and Technology  17. 微生物生理與代謝  Microbial Physiology and Metabolism  18. 生化工程  Biochemical Engineering  19. 高等食品工程  Advanced Food Engineering  20. 高等食品加工  Advanced Food Processing  21. 食品機械特論  Special Topics on Food Machinery  22. 高等食品化學  Advanced Food Chemistry  23. 生物技術特論  Advanced Biotechnology  24. 機能性食品  Functional Foods  25. 食品工程特論  Special Topics in Food Engineering  26. 獨立研究  Independent Studies  27. 數量方法  Quantitative Methods  28. 農企業行銷管理專題  Seminar on Marketing Management of Agribusiness  29. 談判與溝通  Negotiating Strategies and Tactics for Business | 1.筆試及口頭發表  Written and Oral examinations  2.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 Skills  2.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  Seminar  2.全球研討會  Global Seminar  3.專題研究  Special Research Project  4.溝通技巧  Communication Skills  5. 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 examinations  2.口頭發表  Oral Presentations |

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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 Methods  3.行銷管理專題  Special Topics on Marketing Management  4.統計取樣法  Sampling methods  5. 供應鏈管理  Supply Chain Management  6. 計畫評估與管理  Project Appraised and Management  7. 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 Methods  2.試驗設計與數據分析  Experimental design and data analysis.  3.統計取樣法  Sampling methods  4.電顯技術  Electron microscopy  5.天然物特論  Special topics of nature products  6.試驗設計及數據分析  Experimental Design and Data Analysis  7. 供應鏈管理  Supply Chain Management  8. 計畫評估與管理  Project Appraised and Management  9. 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 methods  4.電顯技術  Electron microscopy  5.天然物特論  Special topics of nature products  6. 試驗設計及數據分析  Experimental Design and Data Analysis  7. 計畫評估與管理  Project Appraised and Management  8. 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 development  2.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 physiology  3.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 Nutrition  2.植物環控生理學  Controlled Environment Plant  Physiolog  3.永續農業發展與規劃  Development and planning in Sustainable Agriculture  4. 熱帶農業生態  Tropical Agriculture Ecology  5. 農業發展核心競爭力策略規劃  Competitive Strategy and Core Planning in Agricultural Development  6. 生物防治特論  Special Topics on Biological Control  7. 農業技術轉移  Agriculture Technology Transfers  8. 高等植物組織培養學  Advanced Plant Tissue Culture Techniques  9. 天然物特論  Special Topics on Natural Products  10. 高等作物學  Advanced Crop Science  11. 草坪生理及管理  Turf Physiology and Management  12. 植物種原保存  Plant Germplasm Conservation | 1.課堂答問  A＆Q in the class  2.筆試  Paper test  3.報告  Report  4.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 fields  2. 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 Nutrition  2.植物環控生理學  Controlled Environment Plant  Physiology  3.永續農業發展與規劃  Development and planning in Sustainable Agriculture  4.熱帶農業生態  Tropical Agriculture Ecology  5.農業發展核心競爭力策略規劃  Competitive Strategy and Core Planning in Agricultural Development  6. 生物防治特論  Special Topics on Biological Control  7. 農業技術轉移  Agriculture Technology Transfers  8. 天然物特論  Special Topics on Natural Products  9. 高等植物組織培養學  Advanced plant tissue culture techniques  10. 高等作物學  Advanced Crop Science  11. 植物種原保存  Plant Germplasm Conservation | 1.課堂答問  A＆Q in the class  2.筆試  Paper test  3.報告  Report  4.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 Nutrition  2.植物環控生理學  Controlled Environment Plant  Physiology  3.永續農業發展與規劃  Development and planning in Sustainable Agriculture  4.天然物特論  Special Topics on Natural Products  5. 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 class  2.筆試  Paper test  3.報告  Report  4.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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| 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)  Seminar  2.農業發展與國際合作特論  Special Topics on Agricultural Development and International Cooperation  3.個體經濟特論  Special Topics on Microeconomics  4.農企業管理特論  Special Topics on Agribusiness Management  5.行銷管理專題  Special Topics on Marketing Management  6. 農企業財務管理  Financial Management of Agribusiness  7. 農企業人力資源管理  Human Resources Management of Agribusiness  8. 農企業投資分析  Agribusiness Investment Analysis  9. 區域經濟與政策分析  Regional Economics and Policy Analysis  10. 農業發展與政策  Agricultural Development and Policy  11. 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)  Seminar  2.農業發展與國際合作特論  Special Topics on Agricultural Development and International Cooperation  3.個體經濟特論  Special Topics on Microeconomics  4.農企業管理特論  Special Topics on Agribusiness Management  5.行銷管理專題  Special Topics on Marketing Management  6. 農企業財務管理  Financial Management of Agribusiness  7. 農企業人力資源管理  Human Resources Management of Agribusiness  8. 農企業投資分析  Agribusiness Investment Analysis  9. 區域經濟與政策分析  Regional Economics and Policy Analysis  10. 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 Policy  13. 農民組織專題  Seminar on Farmers’ Organization  14. 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 projects  2.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)  Seminar  2.農業發展與國際合作特論  Special Topics on Agricultural Development and International Cooperation  3.個體經濟特論  Special Topics on Microeconomics  4.農企業管理特論  Special Topics on Agribusiness Management  5.行銷管理專題  Special Topics on Marketing Management  6. 農企業投資分析  Agribusiness Investment Analysis  7. 區域經濟與政策分析  Regional Economics and Policy Analysis  8. 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 cells  2.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 aquaculture  4.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 feeding  6. 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 Culture  2.進階免疫學  Advanced Immunology  3.國際漁業合作特論  Special Topics on International Fishery Cooperation  4.魚類疫苗學  **Fish Vaccinology**  **5.**家禽學特論  Special Topics on Poultry Management  6.乳牛學特論  Special Topics on Dairy Cattle Management  7. 動物幹細胞建立與應用特論  Special Topics on Application and Establishment of Embryonic Stem Cells  8.魚類學特論  Special Topics on Ichthyology  9.新魚種養殖特論  Special Topics on New Fish Species Culture  10.甲殼類生理學  Special Topics on Crustacean Physiology  11.無脊椎動物免疫學  Invertebrate Immunology  12.海洋生物技術特論  Special Topics on Marine Biotechnology  13.家畜營養生理  Animal Nutritional Physiology  14. 草食動物營養特論  Special Topics on Nutrition for Herbivores  15. 高環境溫度與禽畜生產  High Temperature and Animal Production  16. 實用畜產自動化特論  Special Topics on Application of Animal Products Automation  17. 熱帶畜牧特論  Special Topics on Tropical Livestock Production  18. 畜產污染防治與資源利用  Livestock Pollution Control and Resource Utilization  19. 畜舍策劃特論  Special Topics on Animal House Arrangement  20. 細胞生物學特論  Special Topics in Cell Biology  21. 家畜繁殖管理特論  Special Topics on Livestock Reproductive Management  22. 生殖技術特論  Special Topics on Reproductive Technology  23. 應用動物育種技術  Applied Animal Breeding Technology  24. 牛應用行為學  Applied Cattle Behavior  25. 乳品加工特論  Special Topics on Milk Products Processing  26. 肉品加工特論  Special Topics on Meat Products Processing  27. 動物代謝調節  Animal Metabolic Regulation  28. 飼料技術特論  Special Topics on Feed Manufacture Technology  29. 安全畜產品生產特論  Special Topics on Safe Animal Production  30. 動物行為和福利  Animal Behavior and Welfare  31. 蛋品加工特論  Special Topics on Egg Products Processing  32. 泌乳生理學  Physiology of Lactation  33. 數量遺傳與動物模式論  Quantitative Genetics and Animal Model Methodology  34. 禽畜副產物利用  Utilization of Animal and Poultry  35. 動物基因轉殖特論  Special Topics on Animal Transgenics  36. 基因調控  Gene Regulation  37. 免疫學概論  38. 免疫學特論  Special Topics on Immunology  39. 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 knowledge  2.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  3.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 management  2. 具備疫苗相關知識與技能  With the knowledge and ability of vaccine on fish and adjunvats  3. 團隊合作  Demonstrate team work. | 1.國際漁業合作特論  Special Topics on International Fishery Cooperation  2.魚類疫苗學  **Fish Vaccinology**  3.家禽學特論  Special Topics on Poultry Management  4.乳牛學特論  Special Topics on Dairy Cattle Management  5. 動物幹細胞建立與應用特論  Special Topics on Application and Establishment of Embryonic Stem Cells  6. 魚類學特論  Special Topics on Ichthyology  7. 新魚種養殖特論  Special Topics on New Fish Species Culture  8.甲殼類生理學  Special Topics on Crustacean Physiology  9. 無脊椎動物免疫學  Invertebrate Immunology  10. 海洋生物技術特論  Special Topics on Marine Biotechnology  11. 家畜營養生理  Animal Nutritional Physiology  12. 草食動物營養特論  Special Topics on Nutrition for Herbivores  13. 高環境溫度與禽畜生產  High Temperature and Animal Production  14. 實用畜產自動化特論  Special Topics on Application of Animal Products Automation  15. 熱帶畜牧特論  Special Topics on Tropical Livestock Production  16. 畜產污染防治與資源利用  Livestock Pollution Control and Resource Utilization  17. 畜舍策劃特論  Special Topics on Animal House Arrangement  18. 細胞生物學特論  Special Topics in Cell Biology  19. 家畜繁殖管理特論  Special Topics on Livestock Reproductive Management  20. 生殖技術特論  Special Topics on Reproductive Technology  21. 應用動物育種技術  Applied Animal Breeding Technology  22. 牛應用行為學  Applied Cattle Behavior  23. 乳品加工特論  Special Topics on Milk Products Processing  24. 肉品加工特論  Special Topics on Meat Products Processing  25. 動物代謝調節  Animal Metabolic Regulation  26. 飼料技術特論  Special Topics on Feed Manufacture Technology  27. 安全畜產品生產特論  Special Topics on Safe Animal Production  28. 動物行為和福利  Animal Behavior and Welfare  29. 蛋品加工特論  Special Topics on Egg Products Processing  30. 泌乳生理學  Physiology of Lactation  31. 數量遺傳與動物模式論  Quantitative Genetics and Animal Model Methodology  32. 禽畜副產物利用  Utilization of Animal and Poultry  33. 動物基因轉殖特論  Special Topics on Animal Transgenics  34. 基因調控  Gene Regulation  35. 疫苗佐劑學  36. 進階免疫學  Advanced Immunology  37. 酵素與蛋白質工程學  38.免疫學概論  39. 疫苗工程學  Vaccine Engineering  40. 免疫學特論  Special Topics on Immunology  41. 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 Adjunvats  2. 進階免疫學  Advanced Immunology  3. 酵素與蛋白質工程學  4. 免疫學概論  5.疫苗工程學  Vaccine Engineering  6. 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 Products  2. 木材微生物學  Wood Microbiology  3. 地理資訊系統  Geographic Information Systems  4. 中國園林藝術特論  Special Topics on Chinese Garden Arts  5. 文化景觀特論  Special Topics on Culture Landscape  6. 景觀建築與風水特論  Special Topics on Landscape Architecture and Feng-Shui  7. 造園設計特論  Special Topics on landscape Design  8. 景觀植栽  Landscape Plantation  9. 景觀規劃特論  Special Topics on Landscape Planning  10. 土地開發與管制  Land Development and Control  11. 休閒農業  Leisure Agriculture  12. 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 Products  2.木材微生物學  Wood Microbiology  3.地理資訊系統  Geographic Information Systems  4. 中國園林藝術特論  Special Topics on Chinese Garden Arts  5. 文化景觀特論  Special Topics on Culture Landscape  6. 景觀建築與風水特論  Special Topics on Landscape Architecture and Feng-Shui  7. 造園設計特論  Special Topics on landscape Design  8. 景觀植栽  Landscape Plantation  9. 景觀規劃特論  Special Topics on Landscape Planning  10. 土地開發與管制  Land Development and Control  11. 休閒農業  Leisure Agriculture  12. 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 Materials  2.農業研究資訊  Agricultural Research Information  3. 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 Materials  2.農業研究資訊  Agricultural Research Information  3. 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 engineering  2. 具土壤相關知識  With soil related knowledge | 1.作物需水量  Crop Water Requirements  2.灌溉方法  Irrigation Methods  3.排水工程  Drainage Engineering  4. 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 skill  2. 具土壤相關知識  With soil related knowledge  3. 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 Requirements  2.灌溉方法  Irrigation Methods  3.排水工程  Drainage Engineering  4土壤力學行為  5. 作物需水量專題  6. 土木科技英文I  7. 土木科技英文II  8. 排水專題  9. 灌溉專題  10. 輸砂研究  11土木科技英文III  12. 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 concept   1. 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 genes  2.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 knowledge  2.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 test  2.報告  Report  3.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 development  2.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 agroecosystems  3.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 crops  4.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 crops  5.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 Breeding  2. 種子科學與技術  Seed Science and Technology  3. 熱帶作物生理學  Tropical Crop Physiology  4. 植物逆境生理  Stress Physiology of Plants  5. 果樹生理特論  Special Topics on Fruit Crop  Physiology  6. 高等果樹學  Advanced Pomology  7. 高等蔬菜學  Advanced Olericulture  8. 高等花卉學  Advanced Floriculture  9. 高等園產品處理  Advanced Postharvest Technology of Horticultural Crops  10. 熱帶農業和生物多樣性  Tropical Agriculture and Biodiversity  11. 園藝產品經營專題  Seminar on Managing Business of Horticultural Products  12. 畜水產品經營專題  Seminar on Animal Enterprises Management  13. 糧食安全  Food Security | 1.課堂答問  A＆Q in the class  2.筆試  Paper test  3.報告  Report  4.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 Breeding  2. 熱帶作物生理學  Tropical Crop Physiology  3. 植物逆境生理  Stress Physiology of Plants  4. 果樹生理特論  Special Topics on Fruit Crop  Physiology  5. 高等果樹學  Advanced Pomology  6. 高等蔬菜學  Advanced Olericulture  7. 高等花卉學  Advanced Floriculture  8. 高等園產品處理  Advanced Postharvest Technology of Horticultural Crops  9. 熱帶農業和生物多樣性  Tropical Agriculture and Biodiversity  11. 園藝產品經營專題  Seminar on Managing Business of Horticultural Products  12. 畜水產品經營專題  Seminar on Animal Enterprises Management  13. 糧食安全  Food Security | 1.課堂答問  A＆Q in the class  2.筆試  Paper test  3.報告  Report  4.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 development  2.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 agroecosystems  3.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 crops  4.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 crops  5.具備栽種糧食作物之基本技能  Ability to cultivate food crops  functions, and relationships with crop plants  6.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 Entomology  3. 植物病害防治特論  Special Topics on Plant Diseases Control  4. 有害生物綜合管理特論  Special Topics on Integrated Pest Management  5. 高等植物病理學  Advanced Plant Pathology  6. 熱帶植物病害特論  Special Topics on Tropical Plant  Diseases  7. 熱帶植物蟲害特論  Special Topics on Tropical Insect  Pests  8. 昆蟲生態學特論  Special Topics on Insect Ecology  9. 農藥學特論  Special Topics on Pesticides  10. 高等藥理學  Advanced Pharmacology | 1.課堂答問  A＆Q in the class  2.筆試  Paper test  3.報告  Report  4.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  3.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 Entomology  3.植物病害防治特論  Special Topics on Plant Diseases Control  4.有害生物綜合管理特論  Special Topics on Integrated Pest Management  5.高等植物病理學  Advanced Plant Pathology  6.熱帶植物病害特論  Special Topics on Tropical Plant Diseases  7.熱帶植物蟲害特論  Special Topics on Tropical Insect Pests  8.昆蟲生態學特論  Special Topics on Insect Ecology  9.農藥學特論  Special Topics on Pesticides  10.高等藥理學  Advanced Pharmacology | 1.課堂答問  A＆Q in the class  2.筆試  Paper test  3.報告  Report  4.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. |  |  |  |