

## 系所課程地圖 Department Curriculum Map

系所概要 Department	
系所名稱 Department Name	土壤環境科學系 Department of Soil and Environmental Sciences
班別 Division	學士班 Undergraduate

教育目標 Education Goals	
編號 Number	項目內容 Content
1	提供土壤與環境科學之基礎與應用及跨領域之知識與訓練 Providing foundational and applied knowledge in soil and environmental sciences, as well as interdisciplinary training.
2	培養兼顧基本學理、專業知識及實際操作之土壤與環境科技人才 To cultivate talents in soil and environmental technology who possess a balance of fundamental theoretical knowledge, professional expertise, and practical skills.
3	培養團隊合作精神與溝通協調整合能力 To cultivate a spirit of teamwork and the ability to communicate, coordinate, and integrate effectively.
4	建立多元價值與國際觀 To establish diverse values and a global perspective.
5	強化農業永續經營與環境資源保育教育 To enhance education in sustainable agricultural management and environmental resource conservation.

學生核心能力 Student Core Competencies		
編號 Number	項目內容 Content	對應教育目標編號 Corresponding Education Goal Number
A	具有土壤環境科學之基本知識與實務技能的應用 To possess the basic knowledge and practical skills in the application of soil and environmental sciences.	1, 2, 5
B	跨領域整合與自主學習 Interdisciplinary integration and self-directed learning.	1, 5
C	溝通表達與團隊合作 Communication skills and teamwork.	3
D	瞭解國際脈動與培養人文素養 To understand global trends and cultivate cultural literacy.	4

※附註 Note:

1. 各系所所屬之班別，含學士班、碩士班、博士班等，請分別填寫。

1. Complete the map separately for each division, including Bachelor's, Master's, and Doctoral program.

例如：資管學士班需填寫表二及表三；資管碩士班也須填寫表二及表三。For example, Forms 2 and 3 must be completed for Bachelor's program in Management Information Systems, and also for Master's program in for Bachelor's program in Management Information Systems.

2. 教育目標及核心能力之代號皆以英文字母大寫為主。2. Codes for Education Goals and Core Competencies must be in uppercase English alphabet letters.

3. 可依不同班（組）別填寫教育目標及核心能力。3. Education Goals and Core Competencies can be specific to the division in question.

112年12月26日 Date:2023/12/26



## 課程規畫表 Curriculum Plan

中文課程名稱 Course Title in Chinese	英文課程名稱 Course Title in English	規劃要點 (附註) Plans (Notes)				對應核心能力編號 Corresponding Education Goal Number	建議修課年級 Recommended Year of Study	開課單位 Course Offering Unit	備註 Remarks
		1	2	3	4				
院核心課程(若無免填，請加註必修、選修) College Core Courses (not required if none, otherwise please indicate Required Courses and Elective Courses)									
普通植物學	Botany	U	A	S	2	A(80%) B(20%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
生物統計學	Fundamentals of Biostatistics	U	A	S	3	A(100%)	大二 Sophomore	農藝系 Department of Agronomy	
必修課程 Required Courses									
土壤學	Soil Science	U	A	S	2	A(30%) B(20%) C(30%) D(20%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
土壤學實習	Practice of Soil Science	U	B	S	1	A(70%) B(10%) C(20%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
普通物理學	General Physics	U	A	S	3	A(100%)	大一 Freshman	物理系 Department of Physics	
普通化學	General Chemistry	U	A	S	3	A(100%)	大一 Freshman	化學系 Department of Chemistry	
普通化學實驗	Practice of General Chemistry	U	B	S	1	A(70%) C(30%)	大一 Freshman	化學系 Department of Chemistry	
微積分(一)	Calculus(I)	U	A	Y	2	A(100%)	大一 Freshman	應數系 Department of Applied Mathematics	
微積分(二)	Calculus(II)	U	A	Y	2	A(100%)	大一 Freshman	應數系 Department of Applied Mathematics	
肥料學	Fertilizer	U	A	S	2	A(20%) B(30%) C(20%) D(30%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	遠距教學 Distance Learning
肥料學實習	Practice of Fertilizer	U	B	S	1	A(50%) B(25%) C(25%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
環境科學	Environmental Science	U	A	S	2	A(60%) B(20%) D(20%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
普通植物學	Botany	U	A	S	3	A(80%) B(20%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
普通微生物學	General Microbiology	U	A	S	2	A(70%) B(20%) C(10%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
普通微生物學實習	Practice of General Microbiology	U	B	S	1	A(50%) D(50%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
土壤與環境	Soil and Environment	U	A	S	1	A(100%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
生物統計學	Biostatistics	U	A	S	2	A(40%) B(40%) C(10%) D(10%)	大二 Sophomore	農藝系 Department of Agronomy	112-2新增 academic year added
生物統計學實習	Practice in Biostatistics	U	B	S	1	A(40%) B(40%) C(10%) D(10%)	大二 Sophomore	農藝系 Department of Agronomy	112-2新增 academic year added
土壤物理學	Soil Physics	U	A	S	2	A(50%) B(30%) C(10%) D(10%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	先修土壤學 Prerequisites "Soil Science"
土壤物理學實習	Practice of Soil Physics	U	B	S	1	A(60%) B(10%) C(30%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	
有機化學	Organic Chemistry	U	A	S	3	A(100%)	大二 Sophomore	化學系 Department of Chemistry	
分析化學	Analytical Chemistry	U	A	S	3	A(100%)	大二 Sophomore	化學系 Department of Chemistry	
分析化學實驗	Practice of Analytical Chemistry	U	B	S	1	A(60%) B(10%) C(30%)	大二 Sophomore	化學系 Department of Chemistry	
土壤化學	Soil Chemistry	U	A	S	2	A(30%) B(20%) C(30%) D(20%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
土壤化學實習	Practice of Soil Chemistry	U	B	S	1	A(70%) B(10%) C(20%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
土壤環境微生物學	Soil Environmental Microbiology	U	A	S	2	A(80%) B(10%) C(10%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
土壤環境微生物學實習	Practice of Soil Environmental Microbiology	U	B	S	1	A(60%) B(10%) C(30%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
物理化學	Physical Chemistry	U	A	Y	4	A(100%)	大三 Junior	化學系 Department of Chemistry	

生物化學	Biochemistry	U	A	Y	4	A(70%) B(30%)	大三 Junior	土環系 Department of Soil and Environmental Sciences	
專題討論	Seminar	U	C	S	2	A(50%) B(10%) C(30%) D(10%)	大三 Junior	土環系 Department of Soil and Environmental Sciences	分a-g七組 Divided into seven groups, from A to G.
假期實習	Summer Practicum	U	C	S	0	A(50%) B(30%) C(20%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	三下暑假實習 一個月 Above one month summer Practicum after the Junior year
農場實習	Practice of Farming	U	B	S	1	A(30%) B(30%) C(30%) D(10%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	
專題研究 (與畢業論文二 選一)	Research	U	C	Y	2	A(50%) B(20%) C(20%) D(10%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	分A-D四組 Divided into four groups, from A to D.
畢業論文 (與專題研究二 選一)	Thesis	U	C	Y	2	A(50%) B(20%) C(20%) D(10%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	分A-D四組 Divided into four groups, from A to D.

※附註：規劃要點填表說明：( 1 到 4 各欄位請填正確代表字母 )

Note: Instructions for completing this form are provided below (please provide the correct English alphabet letters in fields 1 to 4)

1: U-學士課程、M-碩士課程、D-博士課程 • 1: U-Bachelor's program, M-Master's program, D-Doctoral program.

2: A-正課、B-實習課、C-台下指導之科目如學生講述或邀請演講之專題討論、專題研究……等 •

2: A-Lecture, B-Internship, C-Subjects with private guidance such as student presentations or invited speeches, topic discussions, topic research, etc.

3: S-學期課、Y-學年課 • 3: S-Semester course, Y-Year-long course.

4: 科目 ( 全期或全年 ) 總學分數 ( 請填阿拉伯數字 ) • 4: Total course (full-semester or full-year) credits (in Arabic numerals).

112年12月26日 Date:2023/12/26



課程規畫表 Curriculum Plan

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		1	2	3	4				
選修課程 Elective Courses									
氣候學	Climatology	U	A	S	3	A(60%) D(40%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
地質學	Geology	U	A	S	3	A(70%) B(10%) C(10%) D(10%)	大一 Freshman	土壤系 Department of Soil and Environmental Sciences	
無土栽培之營養管理	Nutrient Management in Soilless System	U	A	S	3	A(75%) B(25%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	
環境遙測導論	Introduction to Environmental Remote Sensing	U	A	S	3	A(60%) B(20%) D(20%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	
地形學	Geomorphology	U	A	S	2	A(50%) B(30%) C(10%) D(10%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	
土壤水文	Soil Hydrology	U	A	S	3	A(50%) C(25%) D(25%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	
礦物學	Mineralogy	U	A	S	2	A(30%) B(20%) (30%) D(20%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	
礦物學實習	Practice of Mineralogy	U	B	S	1	A(30%) B(20%) C(30%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	
作物與土壤	Crop and Soil	U	A	S	3	A(80%) B(20%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	遠距教學 Distance Learning
科學文獻研讀與翻譯	Literature Review and Translation	U	A	S	2	A(40%) B(30%) C(20%) D(10%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
植物營養學	Plant Nutrition	U	A	S	3	A(60%) B(20%) C(10%) D(10%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
蔬菜肥培管理	Fertilization Management of Vegetables	U	A	S	2	A(75%) B(25%)	大四 Senior	土壤系 Department of Soil and Environmental Sciences	
土壤化育與分類概論	General Concepts of Soil Genesis and Classification	U	A	S	3	A(60%) B(10%) C(10%) D(20%)	大四 Senior	土壤系 Department of Soil and Environmental Sciences	
環境分子物理導論	Introduction to Environmental Molecular Physics	U	A	S	3	A(25%) B(50%) D(25%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
土壤污染	Soil Pollution	U	A	S	2	A(80%) D(20%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	
土壤肥力	Soil Fertility	U	A	S	3	A(60%) B(20%) C(10%) D(10%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
環境影響評估	Environmental Impact Assessment	U	A	S	3	A(50%) B(20%) C(20%) D(10%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	遠距教學 Distance Learning
環境與應用地質學	Environmental and Applied Geology	U	A	S	2	A(30%) B(40%) C(10%) D(20%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
灌溉與排水	Irrigation and Drainage	U	A	S	3	A(60%) B(10%) D(30%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
水化學	Water Chemistry	U	A	S	3	A(50%) B(30%) C(20%)	大四 Senior	土壤系 Department of Soil and Environmental Sciences	
環境污染化學	Chemistry of Environmental Pollution	U	A	S	2	A(30%) B(20%) C(30%) D(20%)	大四 Senior	土壤系 Department of Soil and Environmental Sciences	
土壤毒物分析	Analysis of Soil Toxicant	U	A	S	3	A(30%) B(20%) C(30%) D(20%)	大四 Senior	土壤系 Department of Soil and Environmental Sciences	
土壤生物技術	Soil Biotechnology	U	A	S	3	A(80%) B(20%)	大四 Senior	土壤系 Department of Soil and Environmental Sciences	遠距教學 Distance Learning
土壤與植體分析技術	Techniques of Soil Testing and Plant Analysis	U	A	S	2	A(75%) C(25%)	大四 Senior	土壤系 Department of Soil and Environmental Sciences	

土壤與植體分析技術實習	Practice of Techniques of Soil Testing and Plant Analysis	U	B	S	1	A(75%) C(25%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	
土壤管理	Soil Management	U	A	S	2	A(30%) B(40%) C(15%) D(15%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	
土壤管理實習	Practice of Soil Management	U	B	S	1	A(30%) B(40%) C(15%) D(15%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	
土地評估利用	Land Use Evaluation and Utilization	U	A	S	3	A(40%) B(20%) C(10%) D(30%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	
地下水污染復育	Remediation of Contaminated Groundwater	U	A	S	2	A(40%) B(30%) C(20%) D(10%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	
都市廢棄物管理	Municipal Solid Waste Management	U	A	S	3	A(50%) B(20%) C(20%) D(10%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	
環境生物技術導論	Introduction to Environmental Biotechnology	U	A	S	3	A(30%) B(30%) C(10%) D(30%)	大二 Sophomore	土環系 Department of Soil and Environmental Sciences	
土壤品質	Soil Quality	U	A	S	3	A(70%) B(10%) C(10%) D(10%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	
土壤健康與氣候變遷	Soil Health and Climate Change	U	A	S	3	A(60%) B(10%) C(20%) D(10%)	大四 Senior	土環系 Department of Soil and Environmental Sciences	
農業概論	Introduction to Agriculture	U	A	S	2	A(50%) B(30%) C(10%) D(10%)		農資院 College of Agriculture and Natural Resources	
永續農業政策研究	Policy Study of Sustainable Agriculture	U	A	S	2	C(50%) D(50%)		農資院 College of Agriculture and Natural Resources	
有機農場經營與管理	Organic Farm operation and management	U	A	S	3	C(50%) 0%		農資院 College of Agriculture and Natural Resources	
永續環境綠色化學	Green Chemistry for Environmental Sustainability	U	A	S	3	A(20%) B(30%) C(20%) D(30%)	大三 Junior	土環系 Department of Soil and Environmental Sciences	
肥料管理與產銷	Management, Marketing and Production of Fertilizers	U	A	S	2	A(60%) B(20%) D(20%)		土環系 Department of Soil and Environmental Sciences	
肥料調製	Fertilizer Processing	U	A	S	2	A(70%) B(20%) D(10%)	大二 Sophomore	土環系 Department of Soil and Environmental Sciences	
污染場址調查及整治	Investigation and Remediation Engineering of Contaminant Sites	U	A	S	3	A(70%) B(10%) C(10%) D(10%)		土環系 Department of Soil and Environmental Sciences	
土壤微生物生態	Soil Microbial Ecology	U	A	S	3	A(60%) B(20%) C(10%) D(10%)		土環系 Department of Soil and Environmental Sciences	
農業廢棄物再利用	Reuse of Management of Organic Wastes	U	A	S	3	A(60%) B(20%) C(10%) D(10%)		土環系 Department of Soil and Environmental Sciences	
水物理導論	Introduction to Water Physics	U	A	S	3	A(70%) B(20%) C(10%)		土環系 Department of Soil and Environmental Sciences	
土壤生物復育	Soil Bioremediation	U	A	S	2	A(60%) B(20%) C(10%) D(10%)		土環系 Department of Soil and Environmental Sciences	
果樹肥培管理	Fertilization Management of Fruit Trees	U	A	S	2	A(70%) B(10%) C(10%) D(10%)		土環系 Department of Soil and Environmental Sciences	
土壤調查	Soil Survey	U	A	S	2	A(60%) B(20%) C(10%) D(10%)	大二 Sophomore	土環系 Department of Soil and Environmental Sciences	
土壤調查實習	Practice of Soil Survey	U	B	S	1	A(60%) B(20%) C(20%)		土環系 Department of Soil and Environmental Sciences	
計算機概論	Introduction to Computer Science	U	A	S	3	A(70%) B(10%) C(20%)		資管系 Department of Management Information Systems	
普通植物學實驗	Practice of Botany	U	B	S	1	A(60%) B(20%) D(20%)		生科系 Department of Life Sciences	

土壤與肥料	Soil and Fertilizer	U	A	S	2	A(70%) B(10%) C(10%) D(10%)		土壤系 Department of Soil and Environmental Sciences	農藝系必修： 園藝系選修 Only for Department of Agronomy and Department of Horticulture
基礎膠體及表面化學	Principles of Colloid and Surface Chemistry	U	A	S	3	A(60%) B(20%) C(10%) D(10%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	
作物水分管理	Crop Water Management	U	A	S	2	A(60%) B(20%) C(10%) D(10%)		土壤系 Department of Soil and Environmental Sciences	
台灣土地資源	Taiwan Land Resources	U	A	S	2	A(70%) B(20%) D(10%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	
穩定同位素技術導論	Introduction to Technique of Stable Isotopes	U	A	S	2	A(30%) B(20%) C(20%) D(30%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	
農企業概論	Introduction to Agribusiness	U	A	S	1	A(30%) B(20%) C(20%) D(30%)	大四 Senior	土壤系 Department of Soil and Environmental Sciences	106-1新增 academic year added
土壤及水中的新興污染物	Contaminants of Emerging Concern in soil and water	U	A	S	3	A(40%) B(30%) C(15%) D(15%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	107-2新增 academic year added
土壤生態學	Soil Ecology	U	A	S	3	A(40%) B(20%) C(20%) D(20%)	大二 Sophomore	土壤系 Department of Soil and Environmental Sciences	108-1由必修改 為選修 Changed from a required course to an optional course
智慧農業在土壤的應用	Application of smart agriculture on soil science	U	A	S	2	A(30%) B(30%) C(10%) D(30%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	108-2新增 academic year added
農業環境監控技術概論與應用	Introduction and Application of Agricultural Environment Monitoring Technology	U	A	S	3	A(30%) B(30%) C(10%) D(30%)	大三 Junior	土壤系 Department of Soil and Environmental Sciences	110-1新增 academic year added
農業英文	English for Agriculture	U	A	S	1	A(20%) B(20%) C(20%) D(40%)	大一 Freshman	農資院 College of Agriculture and Natural Resources	111-2新增 academic year added

※附註：規劃要點填表說明：( 1 到 4 各欄位請填正確代表字母 )

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