



## 教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	生態系生態學		學年/學期 Academic Year/Semester	112/2	
課程名稱(英文) Course Name in English	Ecosystem Ecology				
科目代碼 Course Code	NRES53960	系級 Department & Year	碩士	開課單位 Course-Offering Department	自然資源與環境學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/張世杰				
先修課程 Prerequisite					

### 課程描述 Course Description

本課程的進行方式為依據教科書，依序授課。學生必須於課前預習，並於上課時參與討論。除了教科書，學生也必須閱讀相關科學期刊論文，於課堂上報告與討論。

### 課程目標 Course Objectives

生態系生態學基於系統的概念，探討生態系的結構與功能，以及其時空變異。課程內容將著重生態系能量、水分、以及各種營養元素的儲存與通量介紹，並以國內外重要生態系研究樣區為例，使學生瞭解研究進展。

系專業能力 Basic Learning Outcomes		課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.'s Education Objectives
A	能覺知多元的自然科學與社會科學理論並具備研究能力 To have knowledge of natural and social science theories	●
B	具備自然資源與人類社會議題之調查分析、規劃與經營之能力 To be able to investigate, analyze, plan, and manage both natural resource and human social issues	●
C	具備將環境倫理與生態思想落實於永續性生活型態的能力 To implement sustainable lifestyles based on environmental ethics and ecological principles	○
D	能以整全式的觀點來解析環境問題，並具備發展系統性解決方案的能力 To resolve environmental issues and develop systematic solutions with a global perspective	●
E	具備系統分析、未來思考、溝通協調與團隊合作的能力 The ability to analyze, plan, communicate, and coordinate with others (teamwork)	○
F	具備終身學習、國際視野與外語溝通的能力 To instill the values of lifelong learning, an international perspective, and the ability to communicate in a foreign language	○

圖示說明 Illustration : ● 高度相關 Highly correlated ○ 中度相關 Moderately correlated

### 授課進度表 Teaching Schedule & Content

週次 Week	內容 Subject/Topics	備註 Remarks
1	2024/02/19 Course Introduction	
2	2024/02/26 Ecosystem Energy Budget	Chapters 2 + 4
3	2024/03/04 Ecosystem Soil Functions	Chapter 3
4	2024/03/11 Paper Presentation (1): Energy, Soil	

5	2024/03/18 Ecosystem Carbon Budget (1)	Chapters 5-7
6	2024/03/25 Ecosystem Carbon Budget (2)	Chapters 5-7
7	2024/04/01 Paper Presentation (2): Carbon	
8	2024/04/08 Spring Festival, no class	
9	2024/04/15 Practice: Soil Carbon Flux Measurement	
10	2024/04/22 Ecosystem Water Budget	Chapter 4
11	2024/04/29 Paper Presentation (3): Water	
12	2024/05/06 Ecosystem Nutrient Cycling	Chapters 8 + 9
13	2024/05/013 Paper Presentation (4): Nutrient	
14	2024/05/20 Field Excursion	
15	2024/05/27 Ecosystem Modelling	
16	2024/06/03 Practice: Forest Growth Simulation by BIOME-BGC	
17	2024/06/10 Dragon Boat Festival, no class	
18	2024/06/17 General discussion by arrangement	

教學策略 Teaching Strategies

- 課堂講授 Lecture                     
 分組討論 Group Discussion                     
 參觀實習 Field Trip  
 其他 Miscellaneous:

教學創新自評 Teaching Self-Evaluation

創新教學 (Innovative Teaching)

- 問題導向學習 (PBL)                     
 團體合作學習 (TBL)                     
 解決導向學習 (SBL)  
 翻轉教室 Flipped Classroom                     
 磨課師 Moocs

社會責任 (Social Responsibility)

- 在地實踐 Community Practice                     
 產學合作 Industry-Academia Cooperation

跨域合作 (Transdisciplinary Projects)

- 跨界教學 Transdisciplinary Teaching                     
 跨院系教學 Inter-collegiate Teaching

- 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

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學期成績計算及多元評量方式 Grading & Assessments

配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績 General Performance	40%								Participation and discussion
期中考成績 Midterm Exam	0%								
期末考成績 Final Exam	0%								
作業成績 Homework and/or Assignments	40%			✓					4 times paper presentation
其他 Miscellaneous (_____)	20%		✓						Field excursion and practices

評量方式補充說明

Grading & Assessments Supplemental instructions

教科書與參考書目 (書名、作者、書局、代理商、說明)

Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

Chapin, FS, Matson, PA & Vitousek, PM (2011) Principles of Terrestrial Ecosystem Ecology, Second Edition, Springer.

Relevant scientific journals from which the presentation papers should be searched:

- Ecosystems: <https://www.springer.com/journal/10021>
- Global Change Biology: <https://onlinelibrary.wiley.com/journal/13652486>

課程教材網址(含線上教學資訊, 教師個人網址請列位於本校內之網址)

Teaching Aids & Teacher's Website(Including online teaching information.

Personal website can be listed here.)

線上教學: <https://meet.google.com/wer-jecy-tyh>

其他補充說明 (Supplemental instructions)