Course number	U-LAS14 20052 LE68		
Course title (and course title in English)	Introductory Plant Ecology-E2 Introductory Plant Ecology-E2	Instructor's name, job title, and department of affiliation	Graduate School of Agriculture Associate Professor,HSIANG Tzu-Fan
Group	Natural Sciences	Field(Classification)	Biology(Issues)
Language of instruction	English	Old group	Group B
Number of credits	2		
Number of weekly time blocks	1	Class style	Lecture (Face-to-face course)
Year/semesters	2026・First semester		
Days and periods	Wed.3	Target year	Mainly 1st & 2nd year students
Eligible students	For science students		

[Overview and purpose of the course]

Plant ecology is fundamental to agriculture, conservation, and climate change research. This course explores key ecological principles, focusing on how light, water, nutrients, and disturbances shape plant distribution and adaptation.
Emphasizing real-world applications, students will examine crop responses to climate change, plant-microbe interactions in soil, and the impact of invasive species on agriculture. Modern tools, including genomics and ecological modeling, will be introduced to understand plant-environment interactions and support sustainable land management.
By the end of the course, students will be able to apply ecological concepts to challenges in sustainable agriculture, biodiversity conservation, and ecosystem resilience.

[Course objectives]

Upon successful completion of this course, students will be able to:

1. Explain the key ecological processes that shape plant distribution, abundance, and adaptation, with a focus on agricultural and natural ecosystems.
2. Discuss plant-environment interactions, including crop responses to climate change, plant-microbe relationships, and the ecological role of invasive species.
3. Apply ecological principles to discuss issues of sustainable agriculture, biodiversity conservation, and ecosystem resilience.

[Course schedule and contents)]

Course Schedule
1. Introduction to Plant Ecology
2. Light and Plant Growth
3. Water Relations and Drought Adaptation
4. Soils, Nutrients, and Microbial Interactions
5. Evolutionary Processes and Ecological Adaptation
6. Population Structure and Dynamics
7. Growth, Reproduction, and Flowering Regulation
8. Community Structure and Ecosystem Function
9. Competition, Resource Allocation, and Invasive Species
10. Plant-Pathogen and Herbivore Interactions
11. Disturbance, Fire, and Agricultural Resilience

Continue to Introductory Plant Ecology-E2(2)↓↓↓

Introductory Plant Ecology-E2(2)

12. Succession and Land Use Change
13. Landscape Ecology and Agricultural Land Management
14. Global Change and Plant Responses
≪Final Exam≫

[Course requirements]

None

[Evaluation methods and policy]

Grading: Participation (20%), in-class practices (30%), in-class group presentation (20%) on a topic in the field of plant ecology, and an end of term exam (30%).

[Textbooks]

Not used

[References, etc.]

（References, etc.）

Handouts will be given out in class

[Study outside of class (preparation and review)]

Students are expected to come prepared and actively participate in class activities. Each session typically includes 10-20 minutes of in-class practice, during which students write short answers to one or two questions related to the lecture content.

[Other information (office hours, etc.)]

Open door policy during office hours, and anytime by email.

[Essential courses]

Faculty of Science