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開課班級：四熱農二A

授課老師：陳光堯

學分數：3

課程大綱：

本課程在使學生獲得有關植物生理學之基本知識，課程內容包括理解植物生理所需之基本理化概念、植物之吸水及蒸散作用、礦物營養及養分之吸收輸送、光合作用、呼吸作用、氮素、脂質及其他二次代謝物之代謝。

outline:

The purpose of this course is to acquaint students with knowledge of basic principles and the application of plant physiology on the agricultural system. The contents include: Introduction of concepts in plant physiology, the process of water absorption and transpiration, absorption and translocation of mineral, nutrient, photosynthesis, respiration, metabolism of nitrogen lipid and secondary metabolites .

教學型態：

其他

成績考核方式：

平時成績:30%

期中考:30%

期末考:30%

其它:Attendance: 10%%

本科目教學目標：

- 1.培育熱帶農業基礎人才。
- 2.發展農、林、漁、牧相關技術。
- 3.建立永續農業經營與國際合作觀。

參考書目：

Fundamentals of Plant Physiology 1st Edition

<https://global.oup.com/ushe/product/fundamentals-of-plant-physiology-9781605357904?q=Fundamentals%20of%20Plant%20Physiology&cc=us&lang=en> 書名：Plant Physiology and Development,

版本：6th Edition, 作者：Taiz, Zeiger, M ø ller, and Murphy, 出版商：Oxford University Press,

網址連結：

<https://global.oup.com/ushe/product/plant-physiology-and-development-9781605352558?q=plant%20physiology&lang=en&cc=us>

https://www.amazon.com/Fundamentals-Plant-Physiology-Lincoln-Taiz/dp/1605357901/ref=sr_1_2?dchild=1&keywords=plant+physiology&qid=1611821623&s=books&sr=1-2 eText ISBN:

9781605357911, 160535791X

<https://www.vitalsource.com/products/fundamentals-of-plant-physiology-lincoln-taiz-eduardo-zeiger-v9781605357911>



課程進度表：

週次	起訖月日	授課單元(內容)	備註
第1週	2.21~2.28	General Introduction Plant and Cell Architecture 1. Plant Life: Unifying Principles 2. Overview of Plant Structure 3. Plant Cell Organelles	8日正式上課。8~12日課程加退選，轉學(系)生、復學生及延修生選課，雙主修、輔系申請，12日申辦抵免學分截止日
第2週	2.28~3.07	Water and Plant Cells 1. Water in Plant Life 2. The Structure and Properties of Water 3. Diffusion and Osmosis	
第3週	3.07~3.14	Water Balance of Plants 1. Water in the Soil 2. Water Absorption by Roots 3. Water Transport through the Xylem	28日(日)孔子誕辰紀念日 / 教師節(放假), 29日(一)補假
第4週	3.14~3.21	Mineral Nutrition 1. Essential Nutrients, Deficiencies, and Plant Disorders 2. Treating Nutritional Deficiencies 3. Soil, Roots, and Microbe Solute Transport 1. Passive and Active Transport 2. Transport of Ions across Membrane Barriers 3. Membrane Transport Processes	29日成績優異提前畢業者提出申請截止日
第5週	3.21~3.28	Solute Transport 1. Passive and Active Transport 2. Transport of Ions across Membrane Barriers 3. Membrane Transport Processes Assimilation of Mineral Nutrients 1. Nitrogen in the Environment 2. Nitrate Assimilation 3. Ammonium Assimilation	6日(一)中秋節(放假)，10日(五)國慶日(放假)
第6週	3.28~4.04	QUIZ #1 Photosynthesis: The Light Reactions 1. Photosynthesis in Higher Plants 2. General Concepts 3 Key Experiments in Understanding Photosynthesis	14日學生宿舍安全輔導暨複合式防災疏散演練。18日多益測驗
第7週	4.04~4.11	Make-up class: 0810-10:00 on; Friday (4/8)! Photosynthesis: The Light Reactions 1. Photosynthesis in Higher Plants 2. General Concepts 3 Key Experiments in Understanding Photosynthesis Photosynthesis: The Carbon Reactions 1. The Calvin-Benson cycle (Reductive Pentose Phosphate Cycle) 2. Photorespiration: The C2 Oxidative Photosynthetic Carbon Cycle (C2 photosynthesis) 3. Inorganic	24日(五)補假，25日(六)光復暨古寧頭大捷日(放假)。



		Carbon-Concentrating Mechanisms	
第8週	4.11~4.18	Photosynthesis: Physiological and Ecological Considerations 1. Photosynthesis Is the Primary Function of Leaves 2. Photosynthetic Response to Light by the Intact Leaf 3. Photosynthetic Responses to Temperature	30日校課程委員會
第9週	4.18~4.25	MIDTERM EXAM 13:30 TA209; April 20, 2002	3~9日期中考試
第10週	4.25~5.02	Translocation in the Phloem 1. The Pathway of Translocation 2. Patterns of Translocation: Source to Sink 3. Materials Translocated in the Phloem	13日教務會議, 16日教師期中成績上網登錄截止日
第11週	5.02~5.09	Respiration and Lipid Metabolism 1. Overview of Plant Respiration 2. Glycolysis 3. The Oxidative Pentose Phosphate Pathway	
第12週	5.09~5.16	Signals and Signal Transduction 1.; Signal perception and Amplification 2. Hormones and Plant Development 3. Phytohormone Metabolism and Homeostasis	24~28體育運動週。24日校園路跑。27日運動大會夜間開幕，28日運動大會活動，29日101週年校慶活動日，照常上班
第13週	5.16~5.23	Signals from Sunlight 1.; Plant Photoreceptors 2.; Phytochromes 3.; Phytochrome Responses	
第14週	5.23~5.30	QUIZ #2 Embryogenesis 1. Overview of Plant Growth and Development 2. Embryogenesis: The Origins of Polarity 3. Meristematic Tissues: Foundations for Indeterminate	12日申請停修課程截止日
第15週	5.30~6.06	Seed Dormancy, Germination, and Seeding Establishment 1.; Seed Structure 2.; Seed Dormancy 3.; Release from Dormancy	
第16週	6.06~6.13	Vegetative Growth and Senescence 1.; The Shoot Apical Meristem 2.; Leaf Structure and Phyllotaxy 3.; Differentiation of Epidermal Cell Types	22日校務會議。25日行憲紀念日(放假)
第17週	6.13~6.20	Flowering and Fruit Development 1. Floral Evocation: Integrating Environmental Cues 2. The Shoot Apex and Phase Changes 3. Photoperiodism: Monitoring Day Length	1日(四)開國紀念日(放假)
第18週	6.20~6.27	FINAL EXAM	5~11日期末考試，10~11日學生退宿