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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：

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> 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>

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

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

<https://mytextbooks.org/product/fundamentals-of-plant-physiology-1st-edition-pdf-ebook/>



課程進度表：

週次	起訖月日	授課單元(內容)	備註
第1週	2.22~3.01	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	3.01~3.08	Water and Plant Cells 1. Water in Plant Life 2. The Structure and Properties of Water 3. Diffusion and Osmosis	
第3週	3.08~3.15	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	3.15~3.22	Mineral Nutrition 1. Essential Nutrients, Deficiencies, and Plant Disorders 2. Treating Nutritional Deficiencies 3. Soil, Roots, and Microbe	29日成績優異提前畢業者提出申請截止日
第5週	3.22~3.29	QUIZ #1 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	3.29~4.05	Floating Holiday! Solute Transport 1. Passive and Active Transport 2. Transport of Ions across Membrane Barriers 3. Membrane Transport Processes ;	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	4.05~4.12	Photosynthesis: The Light Reactions 1. Photosynthesis in Higher Plants 2. General Concepts 3 Key Experiments in Understanding Photosynthesis	24日(五)補假，25日(六)光復暨古寧頭大捷日(放假)。
第8週	4.12~4.19	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 Carbon-Concentrating Mechanisms 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	4.19~4.26	MIDTERM EXAM	3~9日期中考試



第10週	4.26~5.03	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	5.03~5.10	Respiration and Lipid Metabolism 1. Overview of Plant Respiration 2. Glycolysis 3. The Oxidative Pentose Phosphate Pathway	
第12週	5.10~5.17	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	5.17~5.24	Signals from Sunlight 1.;Plant Photoreceptors 2.;Phytochromes 3.;Phytochrome Responses	
第14週	5.24~5.31	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	5.31~6.07	Seed Dormancy, Germination, and Seeding Establishment 1.;Seed Structure 2.;Seed Dormancy 3.;Release from Dormancy	
第16週	6.07~6.14	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	6.14~6.21	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	6.21~6.28	FINAL EXAM	5~11日期末考試，10~11日學生退宿