國立清華大學 106 學年第 1 學期新開課程課程大綱

科號	10510LS 312100	組別		學分	3	人數限制	45
修課年級	大二以上						
上課時間	M3M4W2			教室	生二 105		
科目中文名稱	植物生理學						
科目英文名稱	Plant Physiology						
任課教師	劉姿吟						
擋修科目	限大學部 2 年級以上			擋修分數			

一、課程說明	1. To help students understand anatomical structures, cellular activities, and life processes of plants based on the complete life cycle of seed plants from germination to senescence. 2. This course emphasizes how-we-know-what-we-know of plant physiology and is aimed to develop the ability to appreciate and explore the wonders of the plant life. 3. To provide a broad framework for the students who are interested in pursuing advanced study in plant physiology.
二、指定用書	Hopkins W. G. and Hüner N. P. A. (2009) Introduction to Plant Physiology. 4th ed. John Wiley and Sons, Inc.
三、參考書籍	1. Taiz L., Zeiger E., Møller I. M., Angus M., (2015) Plant Physiology and Development. 6th ed. Sinauer Associates, Inc. 2. Jane B Reece, Lisa A Urry, Michael L Cain, Steven A Wasserman, Peter V Minorsky, Robert B Jackson. (2013) Campbell Biology. 10 ed. Benjamin Cummings, Inc.
四、教學方式	1.主要由任課老師講解學習內容 2.各個教學單元結束前，以分組方式進行問題討論及口頭報告(quiz-based discussion)，培養學生主動學習以及獨立思考的能力，並按組員參與討論程度及報告內容作爲課堂上學習成果的評量(共三次，評量分數占總成績 30%)
五、教學進度	**Unit I: Plant Cell, Movement of Water and Nutrients** 1. Plant Growth and Plant Cell Wall 2. Plant water relations at the cell and the whole-plant level 3. Roots, Soils, and Nutrient Uptake 4. Vascular Tissues and Solutes Transport 5. Mineral Nutrients *Quiz-based Discussion*

	Unit II: Photosynthesis 6. Photosynthesis: Harvesting Sunlight 7. Photosynthesis: CO_2 Assimilation 8. Allocation, Translocation and Partitioning of Photoassimilates 9. Cellular Respiration: Unlocking the Energy Stored in Photoassimilates 10. Production and Storage of Secondary Metabolites *Quiz-based Discussion*
	Midterm exam
	Unit III: Plant Development **Seed Dormancy, Germination, and Seedling Establishment** 11. Responding to Light: Photoreceptors and Phototropism 12. Measuring the Time: Photoperiodism and Circadian Clock 13. Flowering Development 14. Plant Senescence and Cell Death *Quiz-based Discussion* **Unit IV: Plant Hormones and Plant Responses to Environments** 15. Plant Hormones (I): Auxin, Gibberellins and Cytokinins 16. Plant Hormones (II): Abscisic Acid, Ethylene and Bassinosteroids 17. Plant Hormones (III): Jasmonic Acid, Salicylic Acid, and Strigolactones
	Final Exam
六、成績考核	課堂上參與小組問答及討論(quiz-based discussion: 30%) 期中考(midterm exam: 30%) 期末考(final exam: 30%) 隨堂考(in-class test: 10%)
七、講義位址 http://	iLMS