

Syllabus

TIGP-MBAS Program - Advanced Plant Biology (core course)

Offering	Fall 2023
Credits	3 credits (core course)
Lecture	Tuesday, 2:00-5:00 pm
Classroom	A236, Agricultural Technology Building, Academia Sinica
Coordinator	Dr. Chung-Ju Rachel Wang (王中茹) Phone: 2787-1120; E-mail: rwang@gate.sinica.edu.tw R120, IPMB Building, Academia Sinica. 中央研究院農科大樓 A236 教室
Textbook	Plant Physiology and Development, 7 th Edition (2022) Lincoln Taiz et al (eds) Oxford Uni. Press. Additional materiel of instructors.

Course Description

This course covers core concepts in plant physiology and development with specific focuses on photosynthesis, water relations, mineral nutrition, hormones, growth and allocation, light signaling, circadian rhythm, morphogenesis, plant reproduction, and finally abiotic stress and biotic stress. The last two lectures are designed to introduce key principles and methods used in most plant research. Through the study of this course, students will gain basic and advanced knowledge of plant biology and learn recent progress in how plants grow and respond to the environment. Such knowledge provides a conceptual basis for graduate students who are studying plants or plant-related topics.

Course Evaluations

1. Attendance (10%), Participation (10%), Mid-term exam (40%), and Final exam (40%)
2. Mid-term and final exams will be conducted in a close-book format.
3. Some instructors may also use in-class quiz or homework for grading.

Lecture Schedule

Date	Topic	Textbook	Instructor
9/5	1. Plant Cell Walls	Chap 1-3	Teh, Ooi-Kock
9/12	2. Water Balance, Plant Mineral Nutrition and Solute Transport	Chap 5-8	Tsay, Yi-Fang
9/19	3. Photosynthesis: The Light Reactions	Chap 9	Chu, Hsiu-An
9/26	4. Photosynthesis: The Carbon Reactions	Chap 10	Li, Hsou-min
10/3	5. Regulation of Plant Source-Sink Communications	Chap 12	Yu, Su-May
10/17	6. Hormone: auxin, gibberellins, cytokinin, brassinosteroids and peptide hormones	Chap 4	Ho, Tuan-hua

10/24	7. Hormone: abscisic acid, ethylene, salicylic acid, strigolactones, and jasmonic acid	Chap 4	Cheng, Wan-Hsing
10/31	8. Photoreceptors 9. Circadian Clocks	Chap 16	Tu, Shih-Long Wu, Shu-Hsing
11/7	Midterm Exam		
11/14	10. Vegetative Growth and Organogenesis	Chap 18, 19	Wang, Chung-Ju
11/21	11. Floral Organ Development 12. Meiosis	Chap 20	Yang, Chang-Hsien Wang, Chung-Ju
11/28	13. Sexual Reproduction	Chap 21	Jauh, Guang-Yuh
12/5	14. Embryogenesis 15. Special Topic: Working on Arabidopsis T-DNA lines	Chap 22	Ho, Chin-Min
12/12	16. Plant Responses to Drought Stress	Chap 15	Verslues, Paul
12/19	17. Biotic interactions	Chap 24	Wu, Chih-Hang May, Lay-Sun
12/26	18. Special Topic: Omics Approaches in Plant Biology		Wu, Ting-Ying Hsu, Chuan-Chih
1/2	Final Exam		