

Enquire Teaching Timetable

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Course Outcome

BIOL 3530 - Plant Physiology

Learning Outcome

To give students the foundation knowledge in plant physiology that will enable them to have better understanding to plants and appreciate other related courses within the biology programme and the plant biotechnology programme.

Course Syllabus

1. Course overview
2. Plant, water and minerals
 - 2.1 Plant and water relations
 - 2.2 Water balance of the whole plant
 - 2.3 Mineral nutrients
 - 2.4 Water and mineral transport
3. Metabolic physiology
 - 3.1 Photosynthesis
 - 3.2 C3 and C4 photosynthesis
 - 3.3 Primary respiration pathway
 - 3.4 Alternative respiration pathways
 - 3.5 Nitrogen metabolism, transport and signaling
 - 3.6 Secondary metabolites and plant defense
4. Growth and development
 - 4.1 Photoreceptors and light control of plant development
 - 4.2 Light signaling
 - 4.3 Photoperiodism and control of flowering
 - 4.4 Seed germination and dormancy
 - 4.5 Embryogenesis and organogenesis
 - 4.6 Reproduction and senescence
 - 4.7 Hormonal control of plant growth and development
 - 4.8 Hormone signaling
5. Plant-environment interactions
 - 5.1 Plant responses to abiotic stress
 - 5.2 Plant responses to biotic stress

課程提綱：

1. 課程概覽
2. 植物、水與礦物質
 - 2.1 植物與水的關係
 - 2.2 植物的水平衡
 - 2.3植物的礦物營養
 - 2.4水與礦物質运输
3. 代謝生理
 - 3.1 光合作用
 - 3.2 C3與C4光合作用
 - 3.3植物呼吸作用--主路呼吸途徑
 - 3.4交替呼吸途径
 - 3.5 氮代谢， 运输及信號傳遞
 - 3.6次級代謝物與植物化學防禦
4. 生長與發育
 - 4.1光受體與光對植物生長的調控
 - 4.2 光信號傳遞
 - 4.3 光週期與開花調控
 - 4.4 種子萌發與休眠
 - 4.5 胚胎發生與器官發生
 - 4.6 生殖與衰老
 - 4.7激素對植物生長和發育的調控
 - 4.8 激素信號傳遞
5. 植物--環境相互作用
 - 5.1 植物對非生物脅迫的響應
 - 5.2植物對生物脅迫的響應

Assessment Type

	Assessment Type	Current Percent
1	Essay test or exam	50
2	Short answer test or exam	50

Feedback for Evaluation

Feedback from course evaluation
Student-staff consultative committee meeting

課目評鑑
師生諮詢委員會會議

Required Readings

Recommended Readings

1. Taiz L and Zeiger E (2010). Plant Physiology (5th Ed.), Sinauer Associates Inc., USA
2. Hopkins WG and Huner NP (2009). Introduction to Plant Physiology (4th Ed.), John-Wiley, N.Y.
3. Buchanan BB, Gruissem W and Jones RL (2000). Biochemistry and Molecular Biology of Plants, American Society of Plant Physiologists
4. Selected journal papers