



UNIVERSITI TEKNOLOGI MARA

AGR519: CROP PHYSIOLOGY

Course Name (English)	CROP PHYSIOLOGY APPROVED
Course Code	AGR519
MQF Credit	3
Course Description	This course will introduce students to the basic agricultural physiology concept and some basic theories that explain the plant physiology process and basic plant anatomy. Emphasis will be placed upon the manner in which these processes relate to agronomic/horticultural crop production.
Transferable Skills	Knowledge of crop physiology in plantation
Teaching Methodologies	Lectures, Blended Learning
CLO	CLO1 Explain the principle of basic plant structure, growth and development CLO2 Demonstrate the principal concept underlying plant physiology CLO3 Describe the process affecting growth and production of agriculture crops
Pre-Requisite Courses	No course recommendations
Topics	
1. The Architecture of Plants 1.1) The plant cell 1.2) Plant meristems and tissues 1.3) Plant organ	
2. Seed Physiology 2.1) Seed structure and composition 2.2) Physiology and biochemistry of seed dormancy 2.3) Bioenergetics and metabolism of germinating seeds	
3. Seedling and crop growth 3.1) Seedling emergence 3.2) Cell walls and cell elongation 3.3) Root development, auxins and gravitropism 3.4) Shoot development and its control by phytohormones 3.5) Phytochrome and light control of crop development	
4. Photosynthesis and crop respiration 4.1) Leaf anatomy and light absorption 4.2) Photosynthesis: The light dependent reaction 4.3) Photosynthesis: The Calvin cycle 4.4) Photorespiration	
5. Plant Water Relation 5.1) Uptake of water 5.2) Movement of water in plants 5.3) Transpiration	
6. Assimilation of minerals and nutrient 6.1) Root characteristics and uptake kinetics 6.2) Nitrogen assimilation 6.3) Nitrogen fixation and its environmental regulation	

7. Hormonal regulation of plant development and secondary plant products

- 7.1) Auxin
- 7.2) Gibberellins
- 7.3) Cytokinins
- 7.4) Ethylene
- 7.5) Abscisic acid (ABA)
- 7.6) Secondary plant products

8. 8.0 Physiology of flowering

- 8.1) 8.1 Floral induction
- 8.2) 8.2 Circadian rhythms and photoperiodism
- 8.3) 8.3 Floral meristems and floral organ development
- 8.4) 8.4 Biochemical signalling involved in flowering

9. 9.0 Fruit development physiology

- 9.1) 9.1 Fruit ripening, ethylene effects

10. 10. Stress physiology

- 10.1) 10.1 Water deficit and drought resistance
- 10.2) 10.2 Heat and chilling stresses
- 10.3) 10.3 salinity stress
- 10.4) 10.4 Flooding and hypoxic stresses

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	written assignment	20%	CLO2
	Presentation	video presentation	20%	CLO3
	Test	online test	20%	CLO1

Reading List	Recommended Text	<ul style="list-style-type: none"> • Scott, P. 2008, <i>Physiology and Behaviour of Plants</i>, John Wiley and Sons Ltd. England
	Reference Book Resources	<ul style="list-style-type: none"> • Hopkins, W.G. and H¹/₄ner, N.P.A. 2004, <i>Introduction to Plant Physiology. 3rd eds.</i>, John Wiley and Sons Ltd. England. • MacAdam, J.W. 2009, <i>Structure and Function of Plants</i>, Wiley-Blackwell, USA • Scott, P. 2008, <i>Physiology and Behaviour of Plants.</i>, John Wiley and Sons Ltd. England.
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	