



UNIVERSITI TEKNOLOGI MARA

AGR129: INTRODUCTION TO PLANT BIOCHEMISTRY

Course Name (English)	INTRODUCTION TO PLANT BIOCHEMISTRY APPROVED
Course Code	AGR129
MQF Credit	3
Course Description	This course will introduce students to the basic plant biochemistry concept and some basic theories that explain the plant physiology process and basic plant anatomy.
Transferable Skills	<ul style="list-style-type: none">- Knowledge and Practical Skills- Communication and Teamwork- Practical experience
Teaching Methodologies	Lectures, Lab Work, Discussion
CLO	<p>CLO1 Describe the fundamental knowledge on plant biochemistry concepts and theories.</p> <p>CLO2 Carry out laboratory experiments relating to plant biochemistry.</p> <p>CLO3 Identify the use and application of knowledge of plant biochemistry in agricultural industry.</p>
Pre-Requisite Courses	No course recommendations

Topics
1. Structure And Biochemical Aspect Of Plant Cells 1.1) Introduction and overview 1.2) Plant cell structure and compartments 1.3) Amino acid, structure and properties 1.4) Carbohydrates; structure and properties 1.5) Nucleic acids; structure and properties 1.6) Lipids; structure and properties
2. Cell Division 2.1) Mitosis 2.2) Meiosis 2.3) Cell cycle regulation 2.4) Plant morphogenesis
3. Water Relations of Plants 3.1) The power of turgor pressure 3.2) Osmotic pressure and water potential 3.3) Positive and negative hydrostatic pressure 3.4) Turgor loss, cytorrhysis, and plasmolysis 3.5) What drives water flow 3.6) The influence of gravity
4. Photosynthesis 4.1) Photosynthesis 4.2) The light cycle (Hill reaction) 4.3) The dark cycle (Calvin cycle) 4.4) Photorespiration 4.5) Carbon concentrating mechanisms 4.6) Respiration 4.7) Krebs cycle 4.8) Electron transport chain

5. Plant growth and development

- 5.1) Embryogenesis
- 5.2) Hormones in plant development; synthesis and metabolism
- 5.3) Analysis of plant growth
- 5.4) Phytochrome and light control of plant development
- 5.5) Biochemical signaling in plants

Assessment Breakdown		%
Continuous Assessment		60.00%
Final Assessment		40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Discuss the given topic related to the syllabus.	20%	CLO3
	Test	Written test 1	20%	CLO1
	Written Report	Virtual laboratory written report.	20%	CLO2

Reading List	Recommended Text
	<ul style="list-style-type: none"> • Denis J. Murphy 2005, <i>Plant Lipids</i>, Taylor & Francis US [ISBN: 1-4051-1904-7] • Paul Karl Stumpf, Eric E. Conn, <i>The Biochemistry of Plants: Carbohydrates</i> [ISBN: 0-12-675414-4] • Donald Voet, Judith G. Voet 2011, <i>Biochemistry</i>, 4 Ed. [ISBN: 978-0470-5709] • Stern, K.R., Bidlack, J.E. and Jansky, S.H. 2008, <i>Introductory Plant Biology</i>, 11 Ed., McGraw-Hill • Dey, P.M. and Harborne, J.B., <i>Plant Chemistry</i>, Harcourt Aria PTE Ltd. Singapore • Stern, K.R., Bidlack, J.E. and Jansky, S.H. 2006, <i>Introductory Plant Biology Laboratory Manual</i>, McGraw-Hill Higher Education Boston • Thomas L. Rost, et al. 2006, <i>Plant Biology</i>, Thomson Brooks Cole USA • Kent, M. 2000, <i>Advanced Biology</i>, Oxford University Press Oxford • Mader, S.S. 2007, <i>Biology Laboratory Manual</i>, McGraw-Hill Higher Education Boston
Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources