



UNIVERSITI TEKNOLOGI MARA

AGA702: SOIL AND PLANT NUTRITION

<b>Course Name (English)</b>	SOIL AND PLANT NUTRITION <b>APPROVED</b>
<b>Course Code</b>	AGA702
<b>MQF Credit</b>	3
<b>Course Description</b>	Soil conditions affecting availability of plant nutrients and movement of nutrients into plants. This course is aimed to provide students with a comprehensive understanding of soil fertility, plant nutrition, and nutrient management plans. Various means of determining nutrient levels in soils and plants are also covered in this course. The detailed knowledge regarding soil fertility and plant growth performance can also be applied to other growing media.
<b>Transferable Skills</b>	Knowledge on soil plant nutrient relationship.
<b>Teaching Methodologies</b>	Lectures, Discussion, Presentation
<b>CLO</b>	CLO1 1. Discuss the influence of chemical, biological, and physical properties of soil as growing media on nutrient availability to plants (LO1 + LO4) CLO2 2. Determine the relationship of soil fertility and plant nutrition problems (LO2 + LO3) CLO3 3. Recommend soil and nutrient management practices that optimize plant productivity and profitability while maintaining or enhancing environmental quality (LO3 + LO8)
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. Introduction</b> 1.1) • World population and food production 1.2) • Principles of plant growth – growth curve 1.3) • Plant and soil	
<b>2. Soil Fertility</b> 2.1) • Soil formation and classification 2.2) • Soil solution and essential elements 2.3) • Soil pH 2.4) • Ion exchange 2.5) • Mineralization and transformation 2.6) • Immobilization 2.7) • Effects of physical property 2.8) • Effects of biological activity	
<b>3. Nutrient Uptake and Transport</b> 3.1) • Roots as absorbing surface 3.2) • Membrane transport 3.3) • Vascular bundle transport 3.4) • Nutrient compartmentation 3.5) • Environmental factor 3.6) • Microbial interaction	
<b>4. Nutrient Functions in Plant</b> 4.1) • Function of macronutrients and principles 4.2) • The role of micronutrients 4.3) • Law of the minimum 4.4) • Method of studying plant nutrition 4.5) • Deficiency symptom 4.6) • Nutrient application injury	

**5. Soil Fertility Evaluation**

- 5.1) • Soil sampling
- 5.2) • Soil testing kits
- 5.3) • Biological test
- 5.4) • Plant tissue analysis
- 5.5) • Sap test
- 5.6) • Interpretation of data
- 5.7) • Estimation of nutrient requirements

**6. Economics of Fertilization**

- 6.1) • Inorganic fertilizer
- 6.2) • Organic waste as source of nutrients
- 6.3) • Time and method of application
- 6.4) • Variables of management
- 6.5) • Economic yield
- 6.6) • Environmental quality
- 6.7) • Sustainable production

<b>Assessment Breakdown</b>	<b>%</b>
Continuous Assessment	70.00%
Final Assessment	30.00%

<b>Details of Continuous Assessment</b>	<b>Assessment Type</b>	<b>Assessment Description</b>	<b>% of Total Mark</b>	<b>CLO</b>
	Assignment	Assignment reports to carry 30%	30%	
	Attendance	Participation in discussion.	5%	
	Quiz	n/a	5%	
	Test	Two tests to carry 30% marks.	30%	CLO1 , CLO2

<b>Reading List</b>	This Course does not have any book resources
<b>Article/Paper List</b>	This Course does not have any article/paper resources
<b>Other References</b>	This Course does not have any other resources