Republic of Iraq

The Ministry of Higher Education

& Scientific Research



University: Diyala College: Agriculture Department: Horticulture and landscaping Stage: Second Lecturer name: Ekhlas Meteab Marer Ahmed Scientific title: Assistant Professor. Qualification: Place of work: College of Agriculture

Flow up of implementation celli pass play

Course Instructor	Ekhlas Meteab Ahmed Marir		
E-mail	ekhlasmeteab@uodiyala.edu.iq		
Title	Plant nutrition		
Course Coordinator	First semester (fall)		
Course Objective	 The aim of teaching the profession is: 1. Studies the concept of plant nutrition 2. Examines the importance of the role of plant nutrients 3. It includes dividing nutrients into macro and microelements 4. Distinguishing between rare, useful, and essential nutrients 5. Functions of nutrients and their deficiency 6. Describe the transport of elements within the plant 7. The student should recognize the symptoms of element deficiency, its causes, and know its treatment 8. The student will learn about water stress, osmotic pressure, water transport within plant tissues, nutrient solutions, and hydroponic and sand cultures. 		
Course Description	 Details include the subject's cognitive and scientific objectives for the student 1. The student gets to know the concept of plant nutrition 2. The student should describe the types of aquatic and sand cultures and their advantages and disadvantages 3. The student should know the symptoms of nutrient deficiency in plants and how to treat this deficiency 4. To compare the symptoms of element deficiency and disease infection, whether insect, bacterial, or fungal. 5. To know the method of adding each nutrient element, whether by spraying or adding and the concentration of the element in the soil and plants. 6. To know the effect of micro and macronutrients on soil and plants 7. To know the environmental effects of using each nutrient and its characteristics 		
Textbook	 Issa, T. A. 1990. Physiology of Crop Plants, University of Baghdad. Hassanein, A. M. 2020. Crop Physiology. College of Agriculture. Al-Azhar University, pp. 221-224 Yassin, B. T. 2001. Fundamentals of Plant Physiology, College of Science, Qatar University. Youssef, M. A. and Al-Younis, M.A. 1988. Plant Nutrition Guide. Mosul University Press 		

Course Assessments	Theoretical semester tests %	Practical semester tests %	Quizzes %	Final practical test %	Final Exam %
	(25%)	(10%)	(5%)	20%	(40%)
General Notes		J	Final grade 100%	Ď	

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the week	the date	Topics Covered	Practical Part	Notes
1		Explaining the concept of plant nutrition and the plant's element content 2- The importance of the role of plant nutrients and their characteristics 3- Soil salinity and plant nutrition	1- Introduction to nutrients:	
2		 Food crops and their role in plant nutrition Composition of plant material Factors that affect the plant's mineral 	- Classification of nutrients	
3		1- Different plant growth media	Supplementing - Classification of	
4		2- Readiness of nutrients in the soil and their absorption by the plant	Lecture continuation (1)	
5		 Dividing nutrients into macro and micro elements Distinguishing between rare, useful and essential nutrients 	1- Chemical composition (inorganic) of the plant:	
6		 Characteristics of nutrients 2- Nutrient elements: Nutrients, definition and division, mineral composition of the plant and the effect of lack of nutrients on 	2- Food farms:	
7		Transport of elements within the plant	Aquatic and sand farms and their advantages and	
8		Absorption of macro and micro nutrients	Necessary nutrients:	
9		he elements potassium and magnesium and their physiological functions, identification and treatment. The elements calcium and magnesium and their physiological functions.	1- Carbon, hydrogen and oxygen:	

10	Supplementing the of lecture (10) to diagnose and treat deficiencies in the elements calcium, magnesium, sulfur, nitrogen, and phosphorus, and their physiological functions, diagnosis, and treatment.	Functions of elements	
11	Supplementing the of lecture (10) to diagnose and treat deficiencies in the elements calcium, magnesium, sulfur, nitrogen, and phosphorus, and their physiological functions, diagnosis, and treatment.	Symptoms of deficiency of major elements, their physiological functions, diagnosis and treatment, methods of treating cases, and the most important affacts of	
12	The elements iron, manganese, phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, identification and	Symptoms of lack elements in soil and plant	
13	Supplementing the of lecture (12) to The elements iron, manganese, phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, identification and treatment.	Conduct Some anvil experiments to show the of nutrient and analyze them	
14	Supplementing the of lecture (14) to The elements iron, manganese, phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, identification and treatment.	Supplementing the of lecture (14)	When the student needs to review the topic intensively
15	The elements iron, manganese, phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, identification and treatment.	Tours in agricultural fields to learn about the most important symptoms of deficiency of macro- and microelements and the extent of their impact on	



Dean's signature Prof. Dr. Raaed Ibrahim Khalil 15/1/2025 Teacher's signature Assist. Professor. Dr. Ekhlas Meteab Marer Ahmed 15/1/2025