



Course Description Form

1. Course Title:	
Soil fertility and fertilizers	
2. Course Code:	
AGHO24_F4131	
3. Semester / Year:	
first class autumn / 2024-2025	
4. The history of preparation of this description	
1/9/2024	
5. Available Forms of Attendance:	
The presence Online	
6. Number of Credit Hours (Total) / Number of Units (Total):	
2Theoretical + 3Practical / 75 hours / 3 units	
7. Course administrator's name (if more than one name)	
Name: Dr. Rana Saadallah Aziz	
Name: A.T. Marwan Mahmoud Yassen	
8. Course Objectives	
Practical: <ul style="list-style-type: none"> - Enable the student to identify soil sampling methods It is prepared for chemical analysis and soil fertility assessment. - Introducing the student to the most important methods of measuring nutrient concentrations in the soil - Introducing the student to the method of detecting different fertilizers and calculating the quantities of added fertilizers and the method and time of their addition. 	Theoretical: <ul style="list-style-type: none"> 1- Enabling the student to learn about the concepts of soil fertility And how to assess soil fertility and prepare fertilizer recommendation . 2 – Enable the student to identify sources and images Nutrients and factors that affect their readiness. 3- Introducing the student to the physiological functions of the branches damaged by these elements and its role in plant growth. 4- Enable the student to diagnose the symptoms of nutrient deficiency And process them in the right way and time.
9. Teaching and Learning Strategies	
Practical : <ul style="list-style-type: none"> - The student is assigned to submit a report on each experiment - Assigning the student the duty of solving mathematical problems 	Theoretical: <ul style="list-style-type: none"> - Interactive lectures - Dialogue and discussion - Assigning students to make reports - Display illustrative images

<ul style="list-style-type: none"> - Commissioning teamwork to rev leadership skills - Assigning the student to make posters models 	Scientific reports on the subject of study. Conduct weekly and monthly tests
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10. Course Structure

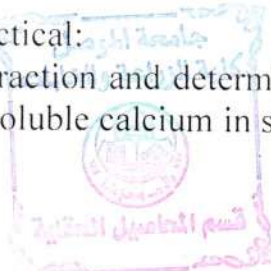
Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Introduction to importance of soil fertility, general definitions, origin and development of soil fertility science Practical: nitrogen fertilizers, standards, specifications, Detection of manure, determination of percentage in manure 	Theoretical: It introduces student to The importance of soil fertility The emergence of soil fertility science and development Practical: The student learns how to Detection of manure Urea and ammonium sulphate and estimation of N percentage in fertilizers and their conformity with standards For standards specifications	2 theoretical 3 Practical	1
Short exams, assignments,	Theoretical: Audio styles, writing on the blackboard	Theoretical: Growth and the factors affecting it. Practical: phosphate fertilizers	Theoretical: The student learns about growth and factors affecting it Practical:	2 theoretical 3 Practical	2

discussions	d, direct dialogue style. Practical: Assignment and report	standard specifications, Detection, determination P ratio in manure	The student can Compost detection Superphosphate and estimation the percentage P in the fertilizer and conformity For standard specifications		
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Quantitative relationships between plant and nutrient The equations of Mecherl and Powell. and Bra theory for the movement elements Practical: Potash fertilizers, standard specifications, Detection, determination K-percentage in fertilizer 	Theoretical: The student able to express About plant growth Using growth equations different depending on Nutrient determinant growth Practical: The student can Manure detection Potash a Appreciation K ratio in manure and conformity For standard specifications	2theoretical 3Practical	3
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct	Theoretical: Preliminary foundations and concepts in soil fertility Fertilization, a soil medium for plant growth, qualities Soil and its relationship nutrient readiness The concept of nutri	Theoretical: The student recognizes impact of The degree of soil interaction and soil exchange capacity	2theoretical 3Practical	4


ns	dialogue style. Practical: Assignment and report	readiness and divisions Nutrients Practical: Taking soil samples from field and preparing them for chemical analysis	On the reading of the elements Dietary Practical: The student g to know Conditions a methods of taking the sample And preparing for chemical analysis		
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Nitrogen, its importance to the plant, nitrogen in soil, nitrogen mineralization, influencing factors Therefore, symptoms of nitrogen deficiency except fertilizer Nitrogenous . Practical: Extraction and determination of ready-made nitrogen from the soil	Theoretical: The student g to know The importance of nitrogen and the way it is absorbed and transformations within the plant And symptoms of deficiency a methods Processed and most important Nitrogen fertilizers Practical: Familiarizes student w stages Extraction a estimation Nitrogen ready a way Kjeldahl and how to calculate Focus in differ	2theore 5 al 3Practic	




			units		
Short exams, assignments, discussions	<p>Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report</p>	<p>Theoretical: Phosphorus - its importance to the plant - photosynthesis, phosphorus in soil and its transformation factors affecting conservation of phosphorus in the soil, symptoms of phosphorus deficiency, Phosphate fertilizers</p> <p>Practical: Extraction and determination of ready-made phosphorus in the soil</p> 	<p>Theoretical: The student must know the importance of phosphorus and the way it is absorbed and transformations within the plant. And symptoms of deficiency and methods of processing and the most important phosphate fertilizers.</p> <p>Practical: Familiarizes the student in ways of extraction and estimation methods of ready-made phosphorus by various ways. Chromaticity and how to calculate. Focus in different units</p>	2theoretical 3Practical	6
Short exams, assignments, discussions	<p>Theoretical: Audio styles, writing on the blackboard, direct</p>	<p>Theoretical: Potassium, its importance to the plant, photosynthesis, Potassium in the soil and transformations, factors affecting it, symptoms of potassium deficiency, Potassium fertilizers</p>	<p>Theoretical: The student must know the importance of potassium and the way it is absorbed and</p>	2theoretical 3Practical	7

ns	<p>dialogue style.</p> <p>Practical: Assignment and report</p>	<p>Practical: Extraction and determination of ready-made potassium in the soil</p>	<p>transformations within the plant</p> <p>And symptoms of deficiency and methods</p> <p>Processed and most important Potash fertilizer</p> <p>Practical: Familiarizes student in ways</p> <p>Extraction and estimation method</p> <p>Ready potassium using Element</p> <p>Measuring Device</p> <p>Flame and how to calculate</p> <p>Focus in different units</p>		
Short exams, assignments, discussions	<p>Theoretical: Audio styles, writing on the blackboard, direct dialogue style.</p> <p>Practical: Assignment and report</p>	<p>Theoretical: Calcium, importance of calcium for plants, factors affecting calcium reading, symptoms of deficiency, calcium fertilizers</p> <p>Practical: Extraction and determination of soluble calcium in soil</p> 	<p>Theoretical: The student should know</p> <p>The importance of calcium and the way it is absorbed</p> <p>And symptoms of deficiency and methods</p> <p>Processed and most important Calcium fertilizer</p> <p>Practical: The student should estimate Soluble calcium</p>	2 theoretical 3 Practical	8

			With chelate substance and how to Concentration calculation In different units		
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Magnesium, the importance of magnesium for the plant factors Affecting Magnesium Readiness, Symptoms Deficiency, magnesium fertilizers Practical: Extraction and determination of magnesium dissolved in soil	Theoretical: The student should know The importance of magnesium and the way it is absorbed And symptoms of deficiency and methods Processed and most important Magnesium fertilizers Practical: The student should estimate Magnesium dissolved in surfacing With chelate substance and how to Concentration calculation In different units	2 theoretical 3 Practical	9
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct	Theoretical: Sulfur, the importance of sulfur for plants, cycle of sulfur in the soil, sulfur sources, Symptoms of sulfur deficiency, sulfur fertilizers	Theoretical: The student knows importance of sulfur and the way it is absorbed And	2 theoretical 3 Practical	10

ns	<p>dialogue style.</p> <p>Practical: Assignment and report</p>	<p>Practical: Extraction and determination of ready-made sulfur in soil</p>	<p>symptoms of deficiency and methods</p> <p>Processed and most important Sulfur fertilizers</p> <p>Practical: The student knows the method of appreciation of Ready sulfur in way</p> <p>Turbidity and how to calculate</p> <p>Focus in different units</p>		
Short exams, assignments, discussions	<p>Theoretical: Audio styles, writing on the blackboard, direct dialogue style.</p> <p>Practical: Assignment and report</p>	<p>Theoretical: Microelements, iron, zinc, copper</p> <p>Its importance to the plant and the factors affecting the readiness</p> <p>And the symptoms of deficiency on the plant</p> <p>practical: Methods for measuring water potential of soil and plant</p> <p>Practical: extracting and estimating elemental cations</p> <p>Micro-ready in the soil</p> 	<p>Theoretical: The student must know</p> <p>The importance of Al-Nasser</p> <p>Minor</p> <p>And symptoms of deficiency and methods</p> <p>Processed and most important Fertilizers microelements</p> <p>Practical: The student must estimate Element cations Micro using Atomic absorption And how to calculate concentration</p> <p>In different units</p>	2theoretical 11 3Practical	

Short exams, assignments, discussions	<p>Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report</p>	<p>Theoretical: Microelements, manganese and boron and molybdenum, importance for the plant factors affecting its readiness the symptoms of deficiency On the plant</p> <p>Practical: Extraction and determination of ready-made boron in soil Hot water method</p>	<p>Theoretical: The student to know the importance of manganese, boron, Molybdenum Symptoms Deficiency ways to address them And its important fertilizers Practical: The student to estimate Boron using Chromatography method And how to calculate concentration In different units</p>	2 theoretical 3 Practical	12
Short exams, assignments, discussions	<p>Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report</p>	<p>Theoretical: Organic matter in the soil</p> <p>Practical: Measurement of soil organic matter and calculation C/N</p> 	<p>Theoretical: The student to know The importance of organic matter For soil, plant and factors affecting decomposition Practical: The student to measure percentage organic matter in the soil and calculate C/N</p>	2 theoretical 3 Practical	13

Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Soil Fertility Assessment Practical: Soil fertility assessment its characteristics General	Theoretical: The student familiar with methods evaluation Soil is fertile Practical: Enabling student to judge On soil fertility from During its general properties	2theoretical 3Practical	14
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Soil microorganisms and their relationship to fertility The soil . Practical: Tip for the preparation special nutrient solutions Aquaculture	Theoretical: The student recognizes importance of Soil biology and its role in Soil fertility and interactions occurring in soil Practical: The student can prepare Nutrient solution in concentration different	2theoretical 3Practical	15

11. Course Evaluation					
Relative Weight%	Grade	Calendar date (week)	Calendar methods	t	
13%	7Theoretical +6Practical	Theoretical week 15 Practical week 1-15	Theoretical Final Report + Practical Experience Reports	1	
6%	4Theoretical +2Practical	Week (3)	Quiz (1)	2	

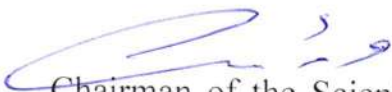
15%	10 Theoretical +5 Practical	Week (9)	Mid-term exam. (theoretical + practical)	3
6%	4 Theoretical +2 Practical	Week (12)	Quiz (2)	4
20%	20	Practical exams week	Final Practical Test	5
40%	40	Theoretical exams week	Final theoretical test	6
100%	100		Total	


12. Learning and Teaching Resources

Fertilizers and soil fertility - Dr. Saad Al Al-Nuaimi	Required textbooks (methodology, if any)
Soil fertility and fertilization-d.Kaz Mashhoot Awad	Main references (sources)
Fertilizer technologies and their uses - Nouredine Shawky Ali Plant physiology . Doctor Abdul azim Kaz	Recommended books and references (scientific journals, reports...)
FAO	Electronic References, Websites

Theoretical subject teacher:
Dr. Rana Saadallah Aziz

practical subject teacher:
A.T. Marwan Mahmoud Yassen


Chairman of the Scientific Committee:
Sciences:
Prof. Dr. Weam Yahya Rashid


Head of the Department of Soil
Prof. Dr. Mayasar Muhammed Aziz