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: – 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 metho of detecting different fertilizers and calculating the quantities of added fertilizers and the method and time o their addition.	**Theoretical:** **1- Enabling the studentto learn about th concepts of soil fertility** **And how to assess soil fertility and prepare fertilizer recommendation .** **2 – Enable the student to identify sour and images** **Nutrients and factors that affect their readiness.** **3- Introducing the student to physiological functions of the br 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 an time.**
9. Teaching and Learning Strategies	
Practical : - The student is assigned to submit a rep on each experiment - Assigning the student the duty of solv mathematical problems	**Theoretical:** **- Interactive lectures** **- Dialogue and discussion** **- Assigning students to make reports** **- Display illustrative images**

- 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**

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 fertili general definitions, origin and development science Practical: nitrogen fertilizers, stand specifications, Detection of manu determination of percentage in manure	Theoretical: It introduces student to The importar of soil fertility The emergence soil fertil science and development Practical: The stud learns how to Detection commadi Urea a ammonium sulf and estimation N percentage fertilizers and th conformity For stand specifications	2theoreal 3Practi	1
Short exams, assignments,	Theoretical: Audio styles, writing on the blackboar	Theoretical: Growth and the fact affecting it. Practical: phosphate fertilize	Theoretical: The student lea about growth How to measur and factors affecting him Practical:	2theoreal 3Practi	2

discussio ns	d, direct dialogue style. Practical: Assignme nt and report	standard specifications, Detection, determination P ratio in manure	The student can Compost detection Superphosphate and estimation the percentage P in the fertilize and conformity For stand specifications		
Short exams, assignme nts, discussio ns	Theoretica l: Audio styles, writing on the blackboar d, direct dialogue style. Practical: Assignme nt and report	Theoretical: Quantitative relationsh between plant and nutrient The equations of Mecherl and Powell. and Bra theory for the movement elements Practical: Potash fertilizers, stand specifications, Detection, determination K-percentage in fertilizer	Theoretical: The student able to express About pl growth Using grov equations different depending on Nutrient determinant growth Practical: The student can Manure detecti Potash a Appreciation K ratio in manu and conformity For stand specifications	2theore al 3Practi	3
Short exams, assignme nts, discussio	Theoretica l: Audio styles, writing on the blackboar d, direct	Theoretical: Preliminary foundations a concepts in soil fertility Fertilization, asoil medi for plant growth, qualities Soil and its relationship nutrient readiness The concept of nutri	Theoretical: The stud recognizes impact of The degree of s interaction and soil exchar capacity	2theore al 3Practi	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 readin of the elements Dietary Practical: The student g to know Conditions a methods of tak the sample And preparing for chemi analysis		
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Nitrogen, its importance the plant, nitrogen in Soil , nitrog mineralization , influenc factors Therefore, symptoms nitrogen deficien exceptfertilizer Nitrogenous . Practical: Extraction and determinati of ready-made nitrogen the soil	Theoretical: The student g to know The importar of nitrogen and the way it 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 Keldal and how calculate Focus in differ	2theore al 3Practi	5

			units		
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Phosphorus - its importar to the plant - photos phosphorus in Soil and its transformatio factors affecting conservation phosphorus in the s symptoms of phospho deficiency , Phosphate fertilizers Practical: Extraction and determinati of ready-made phosphorus the soil	Theoretical: The student g to know The importar of phosphorus and the way it absorbed and transformations within the plant And symptoms of deficiency a methods Processed and most important Phosphate fertilizers Practical: Familiarizes student in ways Extraction a estimation meth Ready-made phosphorus by way Chromaticity a how to calculate Focus in differ units	2theore al 3Practi	6
Short exams, assignments, discussio	Theoretical: Audio styles, writing on the blackboard, direct	Theoretical: Potassium, its importance the plant, photo Potassium in the soil and transformations, factors affecting it, symptoms potassium deficiency, Potassium fertilizers	Theoretical: The stud knows importance potassium and the way it absorbed and	2theore al 3Practi	7

ns	dialogue style. Practical: Assignment and report	Practical: Extraction and determinati of ready-made potassium the soil	transformations within the plant And symptoms of deficiency a methods Processed and most important Potash fertilizer Practical: Familiarizes student in ways Extraction a estimation meth Ready potassi using Element Measuring Devi Flame and how calculate Focus in differ units		
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Calcium, importance calcium forplants , factors Affecting calcium readin , symptoms Deficiency, calci fertilizers Practical: Extraction and determinati of soluble calcium in soil	Theoretical: The student g to know The importar of calcium and the way it absorbed And symptoms of deficiency a methods Processed and most important Calcium fertiliz Practical: The student estimate Soluble calcium	2theoretical 3Practi	8

			With chelati substance a how to Concentration calculation In different unit		
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Magnesium, the importar of magnesium for the pla factors Affecting Magnesi Readiness, Symptoms Deficiency, magnesi fertilizers Practical: Extraction and determinati of magnesium dissolved soil	Theoretical: The student g to know The importar of magnesium and the way it absorbed And symptoms of deficiency a methods Processed and most important Magnesium fertilizers Practical: The student c estimate Magnesium dissolved surfacing With chelati substance a how to Concentration calculation In different unit	2theoreal 3Practi	9
Short exams, assignments, discussio	Theoretical: Audio styles, writing on the blackboard, direct	Theoretical: Sulfur, the importance sulfur for plants, cycle sulfur in the soil, sul sources , Symptoms of sul deficiency, sulfur fertilizer	Theoretical: The stud knows importance sulfur and the way it absorbed And	2theoreal 3Practi	10

ns	dialogue style. Practical: Assignment and report	Practical: Extraction and determinati of ready-made sulfur in soil	symptoms of deficiency a methods Processed and most important Sulfur fertilizers Practical: The stud knows the meth of appreciation Ready sulfur i way Turbidity and h to calculate Focus in differ units		
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Microelements, iron, zi copper Its importance to the pla the factors affecting readiness And the symptoms of deficiency on the pl practical: Methods for measuring water potential of soil a plant Practical: extracting and estimati elemental cations Micro-ready in the soil	Theoretical: The student g to know The importar of Al-Nasser Minor And symptoms of deficiency a methods Processed and most important Fertilizers microelements Practical: The student estimate Element cations Micro using Atomic absorb And how calculate concentration In different unit	2theoretical 3Practi	11

Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Microelements, mangan and boron and molybdeum, importance for the plant factors affecting its readinessa the symptoms of deficiency On the plant Practical: Extraction and determinati of ready-made boron in soil Hot water method	Theoretical: The student g to know the importance manganese, boron, Molybium a Symptoms Deficiency a ways to addr them And its m important fertilizers Practical: The student c estimate Boron using Chromatograph method And how calculate concentration In different unit	2theore al 3Practi	12
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Organic matter in the soil Practical: Measurement of soil orga matter and calculation C|N	Theoretical: The student g to know The importar of organic matte For soil, plant a factors affecting decomposition Practical: The student c measure percentage organic matter the soil a calculate C |N	2theore al 3Practi	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 fertil from During its gene properties	2theoreal 3Practi	14
Short exams, assignments, discussions	Theoretical: Audio styles, writing on the blackboard, direct dialogue style. Practical: Assignment and report	Theoretical: Soil microorganisms a their relationship to fertilit The soil . Practical: Tip for the preparation special nutrient solutions Aquaculture	Theoretical: The stud recognizes importance of Soil biology a its role in Soil fertility a interactions occurring in soi Practical: The student prepare Nutrient soluti in concentration different	2theoreal 3Practi	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 +5Practical	Week (9)	Mid-term exam. (theoretical + practical)	3
6%	4Theoretical +2Practical	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 - Noureddine 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

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