

Course Description Form

1. Course Name:	
Organic Matter in Soil	
2. Course Code:	
ORMS347	
3. Semester / Year:	
First fall semester / 2023–2024	
4. Description Preparation Date:	
1\ 9 \ 2024	
5. Available Attendance Forms:	
In presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical + 3 practical / 3.5 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Theoretical: Dr. Rand Abdalhade Gazal Practical: M.M. Mohamad Ayad Harbawee M.M. Husham Saadalden Younes	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> 1- Enabling the student to know the organic matter in the soil 2- Identify the phenotypic characteristics of organisms in the soil 3- Identify how organic matter is transformed into humus in soil 4- Introducing the student to the characteristics of organic matter in the soil 5- Trying to enhance the student's skills in diagnosing and calculating each other Chemical equations 6- Enabling the student to have the ability to analyze Organic matter and enzyme determination and conduct practical experiments to detect some sugars
9. Teaching and Learning Strategies	
Straegy	<ul style="list-style-type: none"> - Interactive lecture - Brainstorming - Dialogue and discussion - Assigning reports - Conducting monthly and daily examinations Interactive lecture -Discussion, dialogue, brainstorming -Conducting laboratory experiments -Assigning reports - Conducting daily and monthly examinations

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical	a1 :The student demonstrates concept organic matter from the soil	Theoretical Organic matter in soil, its definition and sources	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	a11: The student gets to know the material organic matter and its decomposition in soil	Practical Decomposition of organic matter in soil	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
2	2 Theoretical	c1 : The student explains the most important components of plant waste	Theoretical Components of plant waste	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	c1 :The student reveals the origin and method you analyze	Practical Hydrolysis of starch	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
3	2 Theoretical	a2 :Identify organic compounds	Theoretical Simple organic compounds resulting from the decomposition of organic matter	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	d2 : The student can detect Liquefy the gelatin	Practical Detection of gelatin liquefaction	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
4	2 Theoretical	a3 :The student learns about the carbon cycle and enzymatic activity in the soil	Theoretical Organic matter: carbon cycle and enzymatic activity in soil	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	d3 : The student detects the breakdown of fats	Practical Lipolysis	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
5	2 Theoretical	a4 :Recognize transformation Nitrogen bioavailability and microorganisms that decompose urea	Theoretical Biological transformations of nitrogen: nitrogen cycle, urea hydrolysis, nitrification process	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	d4 : The student will be able to decompose organic acids	Practical Hydrolysis of amino acids	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports

6	2 Theoretical	c2 :The student explains how done Mineralization and nitrogen assimilation	Theoretical Nitrogen mineralization, nitrogen metabolism, C/N ratio	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	a12: The student learns how Determination of cellulase enzyme in soil	Practical Determination of cellulase enzyme in soil	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
7	2 Theoretical	a5 : The student is aware of the importance of nitrogen-fixing microorganisms	Theoretical Biological nitrogen fixation	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	d5 : The student detects the decomposition of cellulose	Practical Cellulose hydrolyzes aerobically and anaerobically	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
8	2 Theoretical	b1 : The student judges the role of Microorganisms that convert phosphorus	Theoretical Biotransformations of phosphorus: its cycle and role of microorganisms in transformations	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	e1 : The student is able to estimate the enzyme phosphatase in soil	Practical Determination of phosphatase enzyme in soil	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
9	2 Theoretical	a6 : The student learns about the role of Microorganisms that transform sulfur	Theoretical Biotransformations of sulfur a role Sulfur, its mineralization, representation Microbial, oxidative stress	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	e2 :The student can measure the amount of fungal growth	Practical Quantification of fungal growth	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
10	2 Theoretical	a7 : Determine which students are doing by reducing sulfur compounds inorganicity	Theoretical Reduction of inorganic sulfur compounds	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	e3 : The student will be able to estimate sulfur biologically	Practical Sulfur transformations in biology	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
11	2 Theoretical	a8 : The student learns about the role of Microorganisms that transform Iron	Theoretical Biotransformations of iron oxidation and reduction, decomposition of iron compounds	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style

			Membership		
	3 practical	e4 : The student will be able to estimate the urease enzyme in the soil	Practical Estimation of urease enzyme	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
12	2 Theoretical	b2 : The student is familiar with the role of microorganisms in decomposition of pesticides	Theoretical Decomposition of pesticides in soil	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	e5 : The student is able to estimate the catalase enzyme soil	Practical Estimation of catalase enzyme	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
13	2 Theoretical	c3 : The student explains the relationship between microorganisms	Theoretical Effect of climate and vegetation on soil organic matter content	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	d6 : The student reveals the total reducing sugars	Practical Determination of reducing and total sugars	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
14	2 Theoretical	a9 : The student learns about activity Microbiology in The area near the roots Which is known as the rhizosphere	Theoretical The effect of organic matter on soil properties and the relationship between them	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	d7 : The student reveals an ability Bacteria to perform transformations Nitrogenism	Practical Nitrogen transformations biology	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports
15	2 Theoretical	a10 : The student learns about the most important... Factors affecting growth Microbiology	Theoretical Changes in organic matter agriculture	Interactive lecture, brainstorming, dialogue and discussion, self-learning	theoretical audio methods Writing on the board direct dialogue style
	3 practical	d8 : The student reveals the ability of bacteria to carry out phosphate transformations	Practical Phosphorus transformations biology	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, field project, self-learning	practical Assigning tasks and reports


11. Course Evaluation


	Evaluation	Time of evaluation	Degree	Relative weight
1	Theoretical final report + practical experience reports	Theoretical week 15. Practical week 1-15	7 Theoretical + 6 Practical	13%
2	Short test Quiz1	3 Week	4 Theoretical + 2 practical	6%


3	Midterm exam (theoretical and practical)	9 Week	10 theoretical + 5 practical	15%
4	Short test 2 Quiz	12 Week	4 Theoretical + 2 practical	6%
5	Final practical test	Practical exams week	20%	20%
6	Final theoretical test	The week of theoretical exams	40%	40%
Sum			100%	100%


11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Lectures on organic matter in soil by Dr. Hassan Khader / Anbar University
Electronic References, Websites	


 M. Dr. Rand Abdel Hadi Ghazal
 Theoretical subject teacher:


 M.M. Muhammad Iyad Harbawi
 M.M. Husham Saadalden Younes
 Practical subject teacher


 Dr. Abdul Qader Abash
 Chairman of the Scientific Committee


 Dr. Ammar Younis Ahmed
 Head of the Department of Soil Sciences and Water Resources

