Course Description Form/ Soil and Water conservation

1. Course Name:

Soil and water conservation

2. Course Code:

WASC449

3. Semester / Year:

First semester/2024-2025

4. Description Preparation Date:

1/9/2024

5. Available Attendance Forms:

Life in person + Virtual

6. Number of Credit Hours (Total) / Number of Units (Total)

2 + 3= 75 Hr / 3.5

7. Course administrator's name (mention all, if more than one name)

Name: Dr. khaled Anwer khaled
Assi.Lectu. Reem Waleed Alsafar

8. Course Objectives

Course Objectives

- Enable the student to understand and comprehend what is related to soil and water conservation and its relationship to soil science and water resources
- Enable the student to know the most important methods of soil maintenance and water harvesting
- Enable the student to become familiar with the most important water sources
- Empowering the student with the ability to detect types of water and wind erosion
-The student can control erosion and preserve the soil from erosion
- Enabling the student to become familiar with the most important laboratory methods for estimati erosion and erosion and detecting soil loss rates and their factors.

9. Teaching and Learning Strategies

- Interactive lecture
- Brainstorming
- Dialogue and discussion
- Assigning tasks and reporting
- Presentations of examples of sites degraded by erosion

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 virtual	A1: Learn about the concept of soil and water conservation, its benefits, and an introduction and definition of land degradation by water and wind.	Introduction to conservation	Interactive lecture, brainstormin g, dialogue and discussion, self-learning	Semester exam 1, exam

	3 Laboratory	C1: The student will examine the tools for measuring rain amounts and be able to design scientific experiments by applying modern technologies.	Analysis of rainfall data	Interactive lecture, brainstormin g, dialogue and discussion, self-learning	Semester exam 1, final exam
2	2 virtual	C25: The student should be able to implement water harvesting projects and good agricultural practices to maximize productivity to obtain safe food.	The topic of Precipitation	Interactive lecture, brainstormin g, dialogue and discussion, self-learning	Semester exam 1, final exam
	3 Laboratory	C1: The student will examine the tools for measuring rain amounts and be able to design scientific experiments by applying modern technologies. D19: The student discovers any soil degradation caused by water and is able to deal with water sources, soil and other agricultural natural resources.	Rainfall rate		Direct drawing
3	2 virtual	A2: The student is familiar with the most important factors affecting water erosion	Run off		Semester exam 1, final exam
	3 Laboratory	C1: The student will examine the tools for measuring rain amounts and be able to design scientific experiments by applying modern technologies.	Depth of rainfall		Field evaluation
4	2 virtual	A2: The student is familiar with the most important factors affecting water erosion B20: The student will be able to analyze the factors that have a mutual influence between water scarcity, desertification and climate change.	Rainfall data analysis		Semester exam 1, final exam
	3 Laboratory	D24: The student interprets quantitative information from formulas, graphs, tables, plans, simulations,	Examples of soil and water conservation	Interactive lecture, brainstormin g, dialogue	Practical quiz 2, direct drawing

		and visualizations, draws conclusions from that information, and represents it symbolically, visually, and numerically.		and discussion, self-learning	
5	2 virtual	D1: That the student practices various thinking skills in a systematic and positive manner in diagnosing the problems and issues he faces while working and proposing appropriate solutions to them. E1: The student proposes ways to preserve the environment and natural resources and preserve the soil from grazing	Surface runoff in soil	Interactive lecture, brainstormin g, dialogue and discussion, self-learning	Semester exam 1, final exam
	3 Laboratory	C25: The student should be able to implement water harvesting projects and good agricultural practices to maximize productivity to obtain safe food. D24: The student interprets quantitative information from formulas, graphs, tables, plans, simulations, and visualizations, draws conclusions from that information, and represents it symbolically, visually, and numerically.	The rational method for calculating the loss	Interactive lecture, brainstormin g, dialogue and discussion, self-learning	Semester exam 1, final exam
6	2 virtual	A24: The student exercises the factors affecting erosion in the field and explains the principles of planning and implementing agricultural operations and appropriate scientific methods in soil and water treatment. D1: The student practices various thinking skills in a systematic and positive manner in diagnosing the problems and issues he faces while working and proposing appropriate solutions to them.	Forms of water erosion	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam

	3 Laboratory	C25: The student should be able to implement water harvesting projects and good agricultural practices to maximize productivity to obtain safe food. B20: The student will be able to analyze the factors that have a mutual influence between water scarcity, desertification, and climate change.	The CN method in calculating the flow	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Direct drawing and homework
7	2 virtual	A1: Learn about the concept of soil and water conservation, its benefits, and an introduction and definition of land degradation by water and wind B20: The student will be able to analyze the factors that have a mutual influence between water scarcity, desertification and climate change.	The most important methods of surface and subsurface runoff	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 2, final exam
	3 Laboratory	C1: The student examines the tools for measuring rainfall amounts and is able to design scientific experiments by applying modern technologies. C25: The student should be able to implement water harvesting projects and good agricultural practices to maximize productivity to obtain safe food.	Kinetic energy KE	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Field project
8	2 virtual	A2: The student is familiar with the most important factors affecting water erosion B9: The student explains the most important methods of movement of plankton and sediments as a result of water erosion, and suggests ways to analyze data and information and interpret agricultural phenomena using applied programs to	Mechanics of water erosion	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 2, final exam

		solve the problem of erosion.			
	3 Laboratory	C2: The student should be able to prepare scientific research and studies in his field of specialization. C25: The student should be able to implement water harvesting projects and good agricultural practices to maximize productivity to obtain safe food.	General equation for soil loss	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Direct drawing and homework
9	2 virtual	A1: Learn about the concept of soil and water conservation, its benefits, and an introduction and definition of land degradation by water and wind C2: The student should be able to prepare scientific research and studies in his field of specialization.	Erosion and soil productivit y		Semester exam 2, final exam
	3 Laboratory	C25: The student should be able to implement water harvesting projects and good agricultural practices to maximize productivity to obtain safe food.	Calculatin g the erosion susceptibil ity factor of rain	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Direct drawing and homework
10	2 virtual	B9: The student explains the most important methods of movement of plankton and sediments as a result of water erosion, and suggests ways to analyze data and information and interpret agricultural phenomena using applied programs to solve the erosion problem. C25: The student should be able to implement water harvesting projects and good agricultural practices to maximize productivity to obtain safe food.	Controlling water erosion	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester test2
	3 Laboratory	C2: The student should be able to prepare scientific research and studies in his field of specialization. D19: The student discovers any soil degradation caused	Soil erosion susceptibilit y factor using the nomograph method	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Direct drawing and homework

		by water and is able to deal with water sources, soil and other agricultural natural resources.			
11	2 virtual	B9: The student explains the most important methods of movement of plankton and sediments as a result of water erosion, and suggests ways to analyze data and information and interpret agricultural phenomena using applied programs to solve the erosion problem. C25: The student should be able to implement water harvesting projects and good agricultural practices to maximize productivity to obtain safe food.	USLE Calculation Methods	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final test
	3 Laboratory	C25: The student should be able to implement water harvesting projects and good agricultural practices to maximize productivity to obtain safe food. D19: The student discovers any soil degradation caused by water and is able to deal with water sources, soil and other agricultural natural resources.	Topographic factor calculations in LS erosion	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Direct drawing and homework
12	2 virtual	A1: Learn about the concept of soil and water conservation, its benefits, and an introduction and definition of land degradation by water and wind. A2: The student is familiar with the most important factors affecting water erosion	The concept of wind erosion and its risks	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final Test
	3 Laboratory	B20: The student will be able to analyze the factors that have a mutual influence between water scarcity, desertification, and climate change. C25: The student should be able to implement water	Calculate the weighted rate of dry soil loss, MWD	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Direct drawing and homework

		harvesting projects and good agricultural practices to maximize productivity to obtain safe food.			
13	2 virtual	A2: The student is familiar with the most important factors affecting water erosion B9: The student explains the most important methods of movement of plankton and sediments as a result of water erosion, and suggests ways to analyze data and information and interpret agricultural phenomena using applied programs to solve the erosion problem.	Mechanics of wind erosion	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Final Exam
	3 Laboratory	C6: The student examines the tools used to examine soil C25: The student should be able to implement water harvesting projects and good agricultural practices to maximize productivity to obtain safe food.	Calculate the weighted rate of loss of wet soil (MWD).	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Direct drawing and homework
14	2 virtual	B9: The student explains the most important methods of movement of plankton and sediments as a result of water erosion, and suggests ways to analyze data and information and interpret agricultural phenomena using applied programs to solve the erosion problem.	Controlling wind erosion	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short test, final test
	3 Laboratory	B20: The student will be able to analyze the factors that have a mutual influence between water scarcity, desertification, and climate change. C2: The student should be able to prepare scientific research and studies in his field of specialization. C25: The student should be able to implement water harvesting projects and good agricultural practices to	Crop management factor calculations	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test3

		maximize productivity to obtain safe food.			
	2 virtual	C2: The student should be able to prepare scientific research and studies in his field of specialization B9: The student explains the most important methods of movement of plankton and sediments as a result of water erosion, and suggests ways to analyze data and information and interpret agricultural phenomena using applied programs to solve the erosion problem.	Maintenance applications necessary to maintain productivity	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short test, final test
15	3 Laboratory	B20: The student will be able to analyze the factors that have a mutual influence between water scarcity, desertification, and climate change. D24: The student interprets quantitative information from formulas, graphs, tables, plans, simulations, and visualizations, draws conclusions from that information, and represents it symbolically, visually, and numerically.	Calculating the agricultural uses factor.	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Field project

Course Evaluation

No	Evaluation methods	Evaluation date	Grade	Relative weight
1	Report 1	fourth week	2.5	2.5
2	Report 2	The fifth week	2.5	2.5
3	Short test (1) Quiz	the sixth week	2	2
4	Short test (2) Quiz	The fourteenth week	2	2
5	Short test (3) Quiz	The fifteenth week	1	1
6	Semester test (1)	the sixth week	7.5	7.5
7	Semester test (2)	The eleventh week is difficult	7.5	7.5
8	Final theoretical test	Final semester exams	40	40
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Practical short test (1) Quiz	The first week	1	1
12	Short practical test (2) Quiz	fourth week	0.5	0.5
13	Short practical test (3) Quiz	The fourteenth week	1	1
14	Live drawings and homework	Weeks 6, 8, 9, 10, 11, 12 and 13	5.5	5.5
15	Final practical test	Final semester exams	20	20
	Total	100	100%	%100

Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Soil management and conservation
Main references (sources)	USDA
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

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