

Department of Soil and Water

College of College of Agriculture Engineering Sciences Salahaddin University- Erbil

Subject: Principle of Soil Science

Course Book (Theoretical + Practical) Second Year Students of Horticulture Department

Lecturer's name Asst. Prof. Dr. Tariq F. Sadiq

Academic Year: 2023/2024



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Lecturer's name MSc. Haval Haji Yousif

Academic Year: 2023/2024

Course Book

1. Course name	Principle of Soil Science		
2. Lecturer's in charge	Dr Tariq F. Sadiq		
	MSc. Haval Haji Yousif		
3. Department/ College	Soil and Water\ Agriculture		
4. Contact	ta.fa2008@yahoo.com		
	tariq.sadiq@su.edu.krd		
	Tel: 009647504699925 or 009647704355844		
	haval.yousif@su.edu.krd		
	Tel: (optional)		
5. Time (in hours) per week	For example practical: 4 hrs		
6. Office hours	Daily from 8:30am to 2:00pm		
7. Course code			
8. Teacher's academic	My name is Tariq F. Sadiq and graduated from college of		
profile (Tariq F. sadiq)	Agriculture/ Soil and Water Science in 2005-2006. I		
	master's degree is in Soil Chemistry and Fertility		
	(Salahaddin Uni. 2010). In 2011 I obtained a scholarship		
	from KRG government to complete PhD in the Universiti		
MC II III "X 'C	Putra Malaysia. I finished the study in 2016 and return as		
MSc. Haval Haji Yousif	lecturer. I promoted to Assist Prof in 2021. I have a number		
	of articles published in national and international journals. I		
	have 12 years teaching experience for different soil		
	subjects.		
	I Have BSc in Soil and water in agriculture engineering		
	college at the Salahaddin universit-Erbil, 2009-2013. I Have		
	MSc in Soil Engineering has been received at the		
	Salahaddin University-Erbil, 2017-2020. Thesis title about		
	(Prediction of Swell and Shrinkage Factors for Different		
	Soil Materials within Erbil District, Kurdistan Region-		
	Iraq). Published paper titled under The Swell and Shrinkage		
	Percentages for Various Soil Types and their Prediction		
	from Intrinsic Soil Properties		
9. Keywords	Soil, Soil Science, Soil Properties.		

10. Course overview:

This course explores the fundamental principles of soil science and soils as a natural resource. Students will be introduced to the physics, chemistry, microbiology, morphology, fertility and management of soils, and to the processes driving soil formation. The major soil types of the world and their classification will be discussed, and the relation of major soil characteristics to soil productivity, conservation and sustainability will be addressed. Students will be introduced to the role of soils in food production.

11. Course objective:

To gain understanding of:

1. Fundamental concepts in environmental soil science by providing a comprehensive

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introduction to the basic properties of soils and their relationship with other components of the earth system.

- 2. Essential soil processes that determine soil behaviour, and fertility and management needs.
- 3. Soil description and classification methods.

Major natural and anthropogenic factors that can influence soil formation, development, and quality.

5. Role of soils in major contemporary environmental issues including global climate change, biogeochemical cycling of essential elements, land degradation, and chemical pollution.

12. Student's obligation

The student must have an important role:

- 1- Lecture and Lab attendance are compulsory.
- 2-The students must contribute in the scientific discussions in the class or teaching hall.
- 3-The students must know the importance of quizzes, homework, reports and exams. It is necessary to contribute the student in presenting a scientific subject

13. Forms of teaching

There are different forms of teaching:

- 1-Datashow and power point.
- 2- White board.
- 3-Lectures.

14. Assessment scheme

The course degree was divided as follow %50 of monthly exam, 15M for theoretical part 35M for practical part (15m for first test, 15m for second test and 5m for reports and activity) in theoretical part 5 marks for the first exam, % marks for second exam, 5 marks for daily quiz and preparing reports. Final exam takes %50, 50 marks for theory part only.

15. Student learning outcome:

Upon completion of the course, students are expected to:

- 1-Be familiar with the Soils: their origin and formation.
- 2-Understand and define the physical, chemical, and biological processes that operate in soils.
- 3-Be familiar with the factors influencing soil fertility and nutrient availability.

16. Course Reading List and References:

- 1. Foth, H. D. (1991). Fundamentals of soil science (No. Ed. 8). John Wiley and Sons, Inc.
- 2. Lal, R., & Shukla, M. K. (2004). Principles of soil physics. CRC Press.
- 3. Tan, K. H. (2011). Principles of soil chemistry. (4th Edition). Taylor and Francis Group, LLC.CRC Press is an imprint of Taylor & Francis Group, an Informa business.
- 4. Paul, E. A. (2014). Soil microbiology, ecology and biochemistry. Academic press.

- 5. https://www.google.iq/?gfe_rd=cr&ei=AznWKeoIIfN8gfulq IAQ#q=soil+science+society+of+america
- 6. Havlin, J. L., J. D. Beaton; Tisdale S. L., and W. L. Nelson. 2005. Soil fertility and fertilizers.7thED. Pearson Education Inc., New Jersey.
- 7. Nyle C. Brady and Ray R. Weil. 2002. The Nature and Properties of Soils, 14th Edition. Prentice Hall, Publisher.
- 8. Mark S. Coyne and James A. Thompson. 2006. Fundamental Soil Science, 1st Edition, Thomson Delmar Learning

http://steenbock.library.wisc.edu/subjectguide/soilsci.htm

-http://www.rdg.ac.uk/library/colls/policies/soilscience.html

17. The Topics:	Lecturer's name
1st week Introduction of Soil Science. (Theory).	Lecturer's name
How to take soil sample (Practical).	Dr. Tariq F. Sadiq
and a Louin cum to the control of	ex: (5 hrs)
2 nd week Soil Profile Description. (Theory).	
Soil Profile description in the field (Practical).	
3 rd week Soil Formations Processes (Theory).	Dunya Hussen Waly
Determination of soil color by using munsell soil color	ex: (2 x 3 hrs)
charts (Practical).	
4th week Physical Properties of Soil. (Theory).	
Determination of soil moisture content (Practical).	
5 th week First Midterm Test (Theory).	
(Practical).	
6 th week Continues Physical Properties of Soil.	
(Theory).	
Determination of Soil saturation degree. (Practical).	
7 th week Soil Clay Minerals. (Theory).	
Determination of Soil pH and EC (Practical).	
8th week Chemical Properties of Soil. (Theory).	
Determination of soil texture by hydrometer method	
(Practical).	
9th week Soil Microbiology (Theory).	
Determination of Bulk density by paraffin method	
(Practical).	
10th week Second Midterm Test (Theory).	
Determination of soil Real density by pycnometer.	
(Practical).	
11th week Soil Survey and Classification. (Theory).	
Determination of soil organic matter content (Practical).	
10th week Soil Fertility and Fertilization (Theory).	

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Determination of calcium carbonate (CaCO ₃) in the soil	
(Practical).	
11th week Plant Nutrition (Theory).	
Fertilizer Calculation (Practical).	
10th	
12 th course review (Theoretical).	
(Practical).	
18. Practical Topics (If there is any) There are three main and important skills the students should	Lecturer's name
learn, which are M. PowerPoint, M. Excel and M. Word that led	
them dealing with computer and internet	Dr. Tariq F. Sadiq ex: (5 hrs)
them dearing with computer and internet	ex. (3 ms)
	Dunya Hussen Waly
	ex: (2 x 3 hrs)
	(= 11 2 112)
19. Examinations:	
1. Compositional:	
A. 1-Definition?	
B. 2-give the reason of?	
C. 3- What are the differences between?	
D. 4- Fill-in the blanks?	
E. Enumerate factors that affect	
2. True or false type of exams:	
3. Calculation:	
20. Extra notes:	
21. Peer review پنهو دی هاو د ل	پێداچوو