



Department of Soil and Water

College of Agriculture Engineering and Science

Salahaddin University- Erbil

Subject: Soil and Water Remediation

Level: Fourth Stage

Lecturer's name: Assist Prof Dr. Tariq F. Sadiq

Academic Year: 2023/2024

Course Book

1. Course name	Soil and Water Remediation
2. Lecturer in charge	Dr Tariq F. Sadiq
3. Department/ College	Soil and Water\ Agriculture
4. Contact	ta.fa2008@yahoo.com tariq.sadiq@su.edu.krd Tel: 009647504699925 or 009647817254225
5. Time (in hours) per week	Thursday, 8: 30am-10: 30am
6. Office hours	Daily from 8:30 to 2:00
7. Course code	
8. Teacher's academic profile	My name is Tariq F. Sadiq and graduated from college of Agriculture/ Soil and Water Science in 2005-2006. My 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 Putra Malaysia. I finished the study in 2016 and return as lecturer. I promoted to assistant professor in 2021. I have a number of articles published in national and international journals. I have 13 years teaching experience for different soil subjects.
9. Keywords	Soil, Water, Remediation, Pollution, Phytoremediation
10. Course overview:	This course consists of a study of the ways in which hazardous organic and inorganic materials can be removed or attenuated (reduced) in natural systems. The theory behind various technologies, with an emphasis on bioremediation techniques and their success in practice. An introduction to the unique challenges associated with the remediation of surface and ground water environments, soils.
11. Course objective:	The objective of this course is to provide an introduction to the theory and practice of soil and groundwater remediation to the fourth year soil and water department students.
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, % 15 for theoretical part 35% for practical part in theoretical part 5 marks for the first exam, 5 marks for second exam, 5 marks for daily quiz and preparing reports

Final exam takes %50 marks for theory part only

15. Student learning outcome: At the end of the course, you are expected to:

1. develop an understanding of the fate of contaminants in soil and groundwater.
2. have an introductory knowledge of the soil and groundwater remediation technologies.
3. be able to do basic calculations for the analysis of contaminant fate in soil and groundwater.
4. be able to do basic calculations for the analysis of the outcome of potential remediation technologies.

16. Course Reading List and References:

1. Evan K. Nyer (1998). Groundwater and soil remediation: practical methods and strategies.
2. Chelsea, Mich. Ann Arbor Press. Alok Bhandari ... [et al.]. (2007). Remediation technologies for soils and groundwater sponsored by Remediation Technologies for Soils and Groundwater Task Committee of the Environmental Council, Environmental and Water Resources Institute (EWRI) of the American Society of Civil Engineers. Reston, Va.: American Society of Civil Engineers.
3. Ellen L. Kruger, Todd A. Anderson, Joel R. Coats (1997). Phytoremediation of soil and water contaminants. Washington, DC: American Chemical Society.
4. Juana B. Eweis (1998). Bioremediation principles. Boston: WCB/McGraw-Hill.
5. Franklin J. Agardy and Patrick J. Sullivan (2009). Environmental engineering. Water, wastewater, soil, and groundwater treatment and remediation. 6th ed. Hoboken, N.J.: Wiley.
6. Evan K. Nyer (1993). Practical techniques for groundwater and soil remediation. Boca Raton: Lewis Publishers.
7. Seever, William J. Lehr, Jay H. Hyman, Marve. (2001). Handbook of Complex Environmental Remediation Problems. McGraw-Hill Professional.
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17. The Topics:

Lecturer's name

1st week Introduction to remediation
 2nd week Water pollution
 3rd week Remediation of water pollution1
 4th week Remediation of water pollution2
 5th week **First Test**
 6th week Soil pollution
 7th week Remediation of soil pollution1
 8th week Remediation of soil pollution2.

Lecturer's name
 Dr. Tariq F. Sadiq
 ex: (2 hrs)

<p>9th week Bioremediation 10th week Second Test 11th week Phytoremediation 12th week Class Presentations 13th course review</p>	
<p>18. Practical Topics (If there is any)</p>	
<p>There are three main and important skills the students should learn, which are M. PowerPoint , M. Excel and M. Word that led them dealing with computer and internet</p>	<p>Lecturer's name ex: (3-4 hrs)</p>
<p>19. Examinations: 1. Compositional: 1-Definition? 2-explanation? 3- What are the differences between A and B? 4- Fill-in the blanks? 2. True or false type of exams:</p>	
<p>20. Extra notes:</p>	
<p>21. Peer review</p>	<p>پیداچوونہوہی ھاوہل</p>

The Course schedule is tentative and may be subject to change