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**Department of ---Environmental Sciences**

**College of ……Science……….**

**University of ………Salahaddin……….**

**Subject:…Soil pollution(Practical),**

**Course Book – (Year 1)**

**Lecturer's name MSc. Sakar Abdulqadr Saheed**

**Academic Year: 2022/2023**

 **Course Book**

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| **1. Course name** | Soil pollution (Practical) |
| **2. Lecturer in charge** | Sakar Abdulqadr Saheed |
| **3. Department/ College** | Environmental Sciences/Science |
| **4. Contact** | e-mail:sakar.saheed@su.edu.krdTel:0750 4942040 |
| **5. Time (in hours) per week**  | Practical: 6hrs |
| **6. Office hours** | 2 hours in a week |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | I am Sakar Abdulqadr Saheed. I have MSc. in plant nutrition. I get it during 2011 at biology Department in College of education-Science-Salahaddin University. In addition, I get Bachelor during 2004-2005at the biology department . participated in different training courses such as Instruction source. Iam became lecturer in 2021 I have 6 reaserches. |
| **9. Keywords** |  |
| **10. Course overview:**This practical application course will provide an introduction to soil biology, physics and chemistry through a series of lectures, associated lab classes and field visit's and is aimed at providing a foundation in the essential components of soil science. Students will be introduced to soil classification and analysis techniques used in soil surveying, as well as the basic lab skills required to conduct soil science research, sampling, analysis and reporting across the biological, chemical and physical aspects of the discipline. In addition, the course will introduce soil modelling providing experience in model utilisation and interpretation of modelled outputs. This course provides approximately 50% lectured material and 50% field / laboratory experience with assessed reports designed to improve written communication skills within science. |
| **11. Course objective:**1. The course will cover soil science texts of selective topics together with print media or internet articles which deal with current soil issues." Instructional strategies attempt to strike a balance between developing the students' ability to cope with soil texts, extending their general academic reading skills, and increasing their basic knowledge and understanding of soil. The course will give students a better understanding of a number of soil science topics, the followings are examples but not restricted to: Main safety rules of working in the laboratory, Acquire fundamental soil techniques and skills through practical experiences in the laboratory. soil profile soil mineral and some chemical properties of soil, with some extra topics that will be indentified as the course progress.
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| **12. Student's obligation**Every student must have three examinations, the attendance, classroom activities, translations and the weekly quizzes also taken into account by 5 marks for all. As well as the final examination of the course will be on 15 marks. So that the final grade will be based upon the following criteria:\* Mean of three practical examinations: 12 %\* Daily quizzes: 3%\* Final practical examination: 15 % |
| **13. Forms of teaching**Different forms of teaching will be used to reach the objectives of the course: power point presentations for the head titles and definitions and summary of conclusions, classification of materials and any other illustrations, besides worksheet will be designed to let the chance for practicing on several aspects of the course in the classroom, furthermore students will be asked to prepare research papers on selective topics and summarize articles contents published in English into either Kurdish or Arabic language, those articles need to be from printed media or internet articles. There will be classroom discussions and the lecture will give enough background to translate, solve, analyze, and evaluate problems sets, and different issues discussed throughout the course.To get the best of the course, it is suggested that you attend classes as much as possible, read the required lectures, teacher's notes regularly as all of them are foundations for the course. Lecture's notes are for supporting and not for submitting the reading material including the handouts.try as much as possible to participate in classroom discussions, preparing the assignments given n the course given in the course. |
| **14. Assessment scheme**The overall marks are of two part daily quizzes and monthly exams. The daily tests (quizzes) will be given 10 marks and finally calculated on 3% in addition to the monthly tests (2-3 tests), all these marks calculated as the yearly attempt mark 15% this is the yearly quest degree and the final exam will be done on 20%.‌ |
| **15. Student learning outcome:****Student Learning Outcomes:****Institutional Student Learning Outcomes:  Students will:**1.  Develop higher order and critical thinking skills through:  discussions and projects focusing on soils as a basic and critical natural resource. Encourage the personal development of each student in order to maximize this potential for productive careers and the ability to embrace a *life-long learning* model.2.  Class discussions and guests will foster communication skills through interactive engagement of the students.3.  The role of soil fertility and world population problems, global issues, and environmental implications of fertility management are discussed and covered in class.4.  The impact of the development of agriculture and soil fertility will be at times discussed with regards to its impact on culture development and the humanities'.5.  Develop basic academic success skills particularly with regards to:  organization and study skills needed to cope with the volumes of information on soil fertility.6.  Develop work and career preparation skills:  Knowledge of soil fertility and fertilizer management is fundamental to successful Ag production and future increases in food production required to feed a growing population.  The majority of Ag crop production jobs and service related jobs are dependent on a working knowledge of soil fertility and fertility management.   |
| **16. Course Reading List and References‌:*** **1**.Marc, P. and Jacques, G. (2006). Handbook of Soil Analysis. Springer-Verlag Berlin Heidelberg: 1-995.

**2**.Palmer.R.GandF.R.Troeh.(1966)Introductory soil science laboratory anual1sted.the lowastate university press.ames.lowa.U.S.A.Forth**3** .Richards, L.A. (1954).Diagnosis and Improvement of Saline and Alkaline Soils* **4** . Rayan, J.;Estefan, G and Rashid, A.(2001) Soils and Plant analysis Laboratory Manual . 2 nd edition, Jointly Published by the International Center For Agricultural Research in the Dry Areas (ICARDA) and the National Agricultural Research Center (NARC), Available From ICRADA, Aleppo, Syrianited States Salinity Laboratory Staff, USA. Hand Book No.60
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| **17. The Topics:** | **Lecturer's name** |
| Course programmeIntroduction, course outline, Main safety rules of working in the laboratorySoil pH Determination of Soil organic matterCation Exchange capacity (CEC)Determination of calcium carbonate (CaCO3)Determination of phosphorus in soilContinue subject( Determination of phosphorus in soil)first examinationdetermination available nitrogen in polluted soildetermination of sulphate in soildetermination of available sodium in soilsecond examinationSeminar | ***Week 1******Week 2******Week 3******Week 4******Week 5******Week 6******Week 7******Week 8******Week 9******Wek 10******Week 11******Week 12******Week 13*** |
| **18. Practical Topics (If there is any)** |  |
| **19. Examinations:** |
| **Q1/ Fill the blanks with the correct words.**1. **---------------results in nitrogen loss from soil and produces some forms of intermediate gaseous nitrogen.**

**The method for deter mination of available phosphorus in soil is-------------****Q2/ write the limestone cycle?****Q3/ write the following:-**1. **Why we used EDTA in cation exchange capacity test?**
2. **Where is come 0.05 in Equation for calculation CaCo3% ?**
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| **21. Peer reviewپێداچوونه‌وه‌ی هاوه‌ڵ**  |