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**Department of Soil and Water**

**Agricultural Engineering sciences**

**Salahaddin University - Erbil**

**Subject: Aquatic Chemistry**

**Course Book – (4th  year students)**

**Lecturer's name : Dr . Muslim Rasul Arab Khoshnaw**

B.Sc. Soil and Water/ Salahaddin University – Erbil / 2006

M.Sc. Soil and Water/Plant Nutrition/ Salahaddin University – Erbil / 2011

PhD. Soil and Water/Soil chemistry/ Salahaddin University – Erbil / 2020

Academic Year: (2022-2023)

**Course Book**

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| **1. Course name** | **2022-2023** |
| **2. Lecturer in charge** | **Dr . Muslim Rasul Arab Khoshnaw**  |
| **3.Department/ College** | **Soil and Water Sciences, Agricultural Engineering sciences.** |
| **4. Contact** | **Muslim.khoshnaw@su.edu.krd** **Tel: +9647504538564** |
| **5. Time (in hours) per week**  | **Theory: 2 \* 3** |
| **6. Office hours** | **Daily from 8:30 to 2:00** By arrangement; open door |
| **7. Course code** |  **Spring semester**  |
| **8. Teacher's academic profile**  | Name Muslim Rasul Arab KhoshnawAddress Erbil – Kurdistan region, Iraq Telephone 07504538564 Nationality Iraqi /Kurd Date of birth 1 July 1979 Marital status Married E-mail: muslim.khoshnaw@su.edu.krd |
| **9. Keywords** | **Aquatic chemistry, water chemistry** |
| **10. Course overview:**  |
| **11. Course objective:**1 The goal of this course is to introduce students to the concepts and models used in aquatic chemistry while providing a foundation in the basic principles used in the chemical aspects of environmental science. The course content is centred on the chemical equilibrium and kinetic analysis of the speciation, transformation and partitioning of (primarily) inorganic chemical species in aqueous systems; including the aqueous components of surface and groundwater systems, soils, and the atmosphere. Emphasis is on the study of acid-base chemistry, complexion, precipitation-dissolution and reduction-oxidation reactions. |
| **12. Student's obligation** The student must have an important role:1. The students must contribute in the scientific discussions in the class or teaching hall.
2. 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.4-e-learning |
| **14. Assessment scheme**The course degree was 25 for practical part in theoretical part 15 marks for the first exam , 10 marks for second exam , 5 marks for daily quiz and preparing reports Final exam takes %60, 60 marks for theory .  |
| **15. Student learning outcome:**Course outcomes should clearly relate to topics, assignments, and exams that are covered in the present course. Course outcomes should be clear, measurable, use verbs (e.g., identify, explain,..).  |
| **16. Course Reading List and References‌:**F.M.M. Morel and J.G. Hering, Principles and Applications of Aquatic Chemistry, Wiley-InterscienceWater Chemistry, Mark M. Benjamin (2010) Waveland Press, Inc.  |
| **17. The Topics:** | **Lecturer's name** |
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| Meeting | Hours | Subject |
| 1st meeting | 3 hours |  |
| 2nd and 3rd meeting | 6 hours |  |
| 11/3 to 24/3 holiday |  |
| 4th and 5th meeting | 6 hours |  |
| 6th and 7th meeting | 6 hours |  |
| 7th ,8th and 9th meeting | 9 hours |  |
| 10th ,11th and 12 th meeting | 9 hours |  |
| 13th meeting | 3 |  |

 | Lecturer's name1-Course name Practical Aquatic chemistry2. Lecturer in charge Asst. lect. Aveen Sabir Karem 3. Department/ College Soil and water/ College of Agricultural engineering sciences4. Contact e-mail:aveen.karem@su.edu.krdTel: (07504515570)5. Time (in hours) per week  Practical: 3 |
| **18. Practical Topics (If there is any)** |  |
| There are three main and important skills the students should learn they are power pint , excel and world that led them dealing with computer and internet  | Lecturer's nameex: (3-4 hrs) |
| **19. Examinations:*****1. Compositional:*** 1-Definition?2-explaination?3- What are the differences between.. ?4- Fill-in the blanks?***2.******True or false type of exams:***  |
| **20. Extra notes:**  |
| **21. Peer review** .‌‌  |