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**Department of Dams and Water Resources Engineering**

**College of Engineering**

**University of Salahaddin**

**Subject: Irrigation Engineering II**

**Course Book – (Year 4)**

**Lecturer's name MSc, Khalil Karim HamadAmeen**

**Academic Year: 2020/2021**

**Course Book**

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| **1. Course name** | **Irrigation Engineering II** |
| **2. Lecturer in charge** | **Khalil Kareem** |
| **3. Department/ College** | **Dams and Water Resources/ College of Engineering** |
| **4. Contact** | **e-mail:** khalilbrz@yahoo.com**Tel: (**07504645513**)** |
| **5. Time (in hours) per week**  | **Theory: 2** **Tutorial: 2**  |
| **6. Office hours** | **As per time table** |
| **7. Course code** | **DE403** |
| **8. Teacher's academic profile**  |  |
| **9. Keywords** |  |
| **10. Course overview:** Irrigation is the controlled application of water to croplands.  Its primary objective is to create an optimal soil moisture regime for maximizing crop production and quality while at the same time minimizing the environmental degradation inherent in irrigation of agricultural lands.ORIrrigation is the application of water to the soil to supplement natural precipitation and provide an environment that is optimum for crop production. Well Irrigated crops produce more food:1. Increase in Crop Yield
2. Protection from famine
3. Cultivation of superior crops
4. Elimination of mixed cropping:
5. Economic development
6. Hydro power generation
7. Domestic and industrial water supply.
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| **11. Course objective:**Student is introduced to Irrigation Engineering science including surface irrigation system such as, border irrigation system, furrow irrigation system , basin irrigation system, and , Sprinkler irrigation systems, Drip irrigation system , Students are expected at the end of the year will have the abilities:1- To design land grading.2- To design surface irrigation system.3- To design sprinkler irrigation system. and4-To design drip irrigation system. |
| **12. Student's obligation*** Students must attend and participate in the class.
* students should perform midterm , and final exam

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| **13. Forms of teaching**Different forms of teaching will be used to reach objectives of the course: worksheet will be designed to let the chance for practicing on several aspects of the course in the classroom. To achieve the objectives of the course following forms and techniques will be followed during teaching process:1- Power point presentation for parts of the chapter as required.2-White board will be used to derive the mathematical equations, draw sketches and solve problems in the class3- Examples will be solved in the class through team work.4- Notes about chapters will be handled to the students at the beginning of each chapter to facilitate easier understanding of books but they will not replace the use of books  |
| **14. Assessment scheme**- Exams: The student must provide the following exams, quizzes and homework'- Second Semester Exam 17/40- Quizzes and Home works 6/40- Final Exam 60/100 Four quizzes are required during the year.‌ |
| **15. Student learning outcome:**Students are expected at the end of the year will have the abilities:1- To design land grading.2- To design surface irrigation system.3- To design sprinkler irrigation system. and4-To design drip irrigation system. |
| **16. Course Reading List and References‌:**References: The following books help the student better understanding of the subject materials, the books are available in the college library as well as in the department library.- Surface irrigation system Engineering, Dr Ahmad Hachm- Irrigation ,water power and water resources engineering Dr K. R. Arora ,-Irrigation System design. Richard H. Cuenca |
| **17. The Topics:** | **Lecturer's name** |
| **Part I /** land grading.  **(3 weeks**)**Part I will cover the following:****1-**Design criteria for land grading. (2 hr)2-Land grading design. (8 hr)3-Earth work calculation, volume of cut and volume of fill. (2 hr) **Part II/ Surface irrigation system design. (6.5 weeks)**1- Border irrigation system design. (12 hr) 2- Furrow irrigation system design, (8 hr) 3- Basin irrigation system design. (6 hr)**Part III/ Sprinkler irrigation system design (8 weeks)**1-Principle of sprinkler irrigation system. (8 hr)2-Sprinkler head and sprinkler line design. (10 hr)3-Main pipe line design. (8 hr) 4-Power cost estimation. (6 hr) **Part IV /Drip irrigation system**. **(4 week)** | Lecturer's name:Khalil Kareem (4 hrs/ Week) |
| **18. Practical Topics (If there is any)** |  |
| This course does not contain any practical part. |  |
| **19. Examinations:*****1. Compositional:*** In this course mathematical problems are required to be solved by the students in the exams.For example:1- To design land grading.2- To design surface irrigation system.3- To design sprinkler irrigation system. and4-To design drip irrigation system. |
| **20. Extra notes:** |
| **21. Peer review**  |