**Water Resources**

**Course Description Form**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. Course Name: | | | | | | | | |
| Water Resources | | | | | | | | |
| 1. Course Code: | | | | | | | | |
| CE3103 | | | | | | | | |
| 1. Semester / Year: | | | | | | | | |
| Second semester / Third year | | | | | | | | |
| 1. Description Preparation Date: | | | | | | | | |
| 1/10/2024 | | | | | | | | |
| 1. Available Attendance Forms: | | | | | | | | |
| In class | | | | | | | | |
| 1. Number of Credit Hours (Total) / Number of Units (Total) | | | | | | | | |
| The. 2 hr Tut.1 hr / 3 Units | | | | | | | | |
| 1. Course administrator's name (mention all, if more than one name) | | | | | | | | |
| Name: Aya Luay  Email: aya.luay@muc.edu.iq | | | | | | | | |
| 1. Course Objectives | | | | | | | | |
| **Course Objectives** | | | | 1. Introduce key concepts of soil-water relationships and their impact on agricultural and civil engineering. 2. Explore hydraulic design principles for canals and irrigation methods. 3. Analyze salinity issues and their solutions in irrigation systems. 4. Understand water flow through soil and principles of drainage. 5. Examine the dynamics of groundwater and its implications for drainage design. 6. Develop practical skills in designing depth, spacing, and pipe drainage systems. | | | | |
| 1. Teaching and Learning Strategies | | | | | | | | |
| **Strategy** | | To equip students with the theoretical knowledge and practical skills necessary for understanding soil-water interactions, designing efficient irrigation and drainage systems, and addressing challenges such as salinity and groundwater dynamics in agricultural and civil engineering projects. | | | | | | |
| 1. Course Structure | | | | | | | | |
| **Week** | **Hours** | | **Required Learning Outcomes** | | **Unit or subject name** | | **Learning method** | **Evaluation method** |
|  | 5 | | **Explain soil-water relationships and their importance in irrigation and drainage** | | Soil- Water Relation | | 1. Interactive Learning 2. Collaborative Learning 3. Technology-enhanced 4. Learning Problem-based Learning | Several Ways (Exams + Assignments) |
|  | 5 | | Hydraulic Design of Canal | | Several Ways (Exams + Assignments) |
|  | 5 | | Method of Irrigation, | | Several Ways (Exams + Assignments) |
|  | 5 | | Design hydraulically efficient canals and apply appropriate irrigation methods. | | Salinity Problem | | Several Ways (Exams + Assignments) |
|  | 5 | | Salinity Problem | | Several Ways (Exams + Assignments) |
|  | 5 | | Identify and propose solutions for salinity problems in irrigation projects. | | Flow of Water Through Soil Drainage | | Several Ways (Exams + Assignments) |
|  | 5 | | Flow of Water Through Soil Drainage | | Several Ways (Exams + Assignments) |
|  | 5 | | Flow of Water Through Soil Drainage | | Several Ways (Exams + Assignments) |
|  | 5 | | Analyze water flow through soil and its impact on drainage systems. | | Dynamics of Ground Water | | Several Ways (Exams + Assignments) |
|  | 5 | | Dynamics of Ground Water | | Several Ways (Exams + Assignments) |
|  | 5 | | Dynamics of Ground Water | | Several Ways (Exams + Assignments) |
|  | 5 | | Calculate groundwater dynamics and determine optimal drain depth and spacing.  Design and implement pipe drainage systems effectively. | | Depth and Spacing of Drains | | Several Ways (Exams + Assignments) |
|  | 5 | | Depth and Spacing of Drains | | Several Ways (Exams + Assignments) |
|  | 5 | | Design of Pipe Drains. | | Several Ways (Exams + Assignments) |
|  | 5 | | Design of Pipe Drains. | | Several Ways (Exams + Assignments) |
| 1. Course Evaluation | | | | | | | | |
| 1. Final Exam: 60% 2. Monthly Exams: 15% 3. Reports and Assignments: 10% 4. Attendance and Daily Participation: 10% 5. Oral Evaluation: 5% | | | | | | | | |
| 1. Learning and Teaching Resources | | | | | | | | |
| Required textbooks (curricular books, if any) | | | | | |  | | |
| Main references (sources) | | | | | |  | | |
| Recommended books and references (scientific journals, reports...) | | | | | |  | | |
| Electronic References, Websites | | | | | |  | | |