# Course Description Form

| |
|---|
| 1. Course Name: |
| Irrigation Technology and drainage |
| 2. Course Code: |
| IRTD231 |
| 3. Semester / Year: |
| First semester 2025/2024 |
| 4. Description Preparation Date: |
| 1/9/2024 |
| 5. Available Attendance Forms: |
| In presence |
| 6. Number of Credit Hours (Total) / Number of Units (Total) |
| 2 Theoretical +3 Practical / 3.5 Unit |
| 7. Course administrator's name (mention all, if more than one name) |
| Name: Dr. Faris Akram Salih Al-Wazzan Alia Abdul Latif Jassim<br>Email: dr.farisakram@uomosul.edu.iq |

| 8. Course Objectives | |
|---|---|
| Course Objectives | 1- Preparing students who have the ability to use modern irrigation methods and describe these methods accurately with the possibility of using them within Iraqi soils, which represent calcareous soils... and integrating these methods with drainage networks and disposal of excess water.....<br>2- Entering the agricultural sector with distinguished efficiency through participation. In irrigation projects, modern irrigation techniques, and the use of the best methods in order to reduce water use within agricultural lands and reduce the risk of salt and desert..<br>3- Directing students towards a desire to obtain better experiences when applying for postgraduate studies.. |

| 9. Teaching and Learning Strategies | |
|---|---|
| **Theoretical:**<br>-Interactive lecture<br>-Brainstorming<br>-Dialogue and discussion<br>-Assigning tasks and reporting<br>-Presentations of models of irrigation drainage networks | **Practical:**<br>- Assigning group work to reveal leadership skills<br>- Assigning tasks and reporting for each experiment<br>- He is assigned to prepare a report entitled from his own diligence and prepare it for discussion with Students |

## 1. Teaching and Learning Strategies

| | |
|---|---|
| **Theoretical:**<br>-Interactive lecture<br>-Brainstorming<br>-Dialogue and discussion<br>-Assigning tasks and reporting<br>-Presentations of models of irrigation and drain networks | **Practical:**<br>- Assigning group work to reveal leadership skills<br>- Assigning tasks and reporting for each experiment<br>- He is assigned to prepare a report entitled from his own diligence and prepare it for discussion with Students |

## 2. Course Structure

| Week | Hours | Required Learning Outcomes | Unit or subject name | Learning method | Evaluation method |
|---|---|---|---|---|---|
| 1 | 2 Theoretical<br>3Practical | **Theoretical:**<br>Explains the concept to the student Irrigation and relationships mathematical<br>**practical :**<br>Empowering the student to solve Equations | **Theoretical:**<br>The concept of irrigation and the introduction to irrigation with mathematical relationships between the size and mass of soil components<br>**practical :**<br>Mathematical relationships for soil components and the equivalent depth of soil water | **theoretical:**<br>Audio methods style<br>Writing on the board<br>Direct dialogue style<br>**practical :**<br>Adapt tasks and reports | Conduct daily examinations.<br>Assignment discussions |
| 2 | 2 Theoretical<br>3Practical | **theoretical:**<br>Explains depth to the student The equivalent and its importance<br>**practical :**<br>Explains to the student Fundamentals of humidity measurement | **theoretical:**<br>Equivalent depth derivations with solving mathematical problems<br>**practical :**<br>Methods for measuring soil moisture | **theoretical:**<br>Audio methods style<br>Writing on the board<br>Direct dialogue style<br>**practical :**<br>Adapt tasks and reports | Conduct daily examinations.<br>Assignment discussions |
| 3 | 2 Theoretical<br>3Practical<br><br>2 Theoretical<br>3Practical | **Theoretical:**<br>Explains the concepts of movement to the student<br>**practical :**<br>Shows the student the measurement Field capacity And the wilting | **theoretical:**<br>Physical concepts of motion and its laws<br>**practical :**<br>Measuring field capacity and permanent wil point | **theoretical:**<br>Audio methods style<br>Writing on the board<br>Direct dialogue style<br>**practical :**<br>Adapt tasks and reports | Conduct daily examinations.<br>Assignment discussions |

| | | | | | |
|---|---|---|---|---|---|
| 4 | 2 Theoretical 3Practical | point<br><br>**Theoretical**: Explains to the student Types of pumps agricultura<br><br>**practical** : Explains measurement methods using multiple methods | **Theoretical:** Choosing the type of pump with examples<br><br>practical : Methods for measuring irrigation water discharge | **theoretical:** Audio methods style Writing on the board Direct dialogue style<br><br>**practical** : Adapt tasks and reports | Conduct daily examinations. Assignment discussions |
| 5 | 2 Theoretical 3Practical | **Theoretical:** Enabling the student to Irrigation water evaluation<br><br>**practical** : Shows mathematical applications weirs | **Theoretical:** Evaluation of irrigation water quality<br><br>**practical** : Irrigation canal design | **theoretical:** Audio methods style Writing on the board Direct dialogue style<br><br>**practical** : Adapt tasks and reports | Conduct daily examinations. Assignment discussions |
| 6 | 2 Theoretical 3Practical | **Theoretical:** Shows the student importance Irrigation efficiencies<br>**practical** : Empowering understanding competencies Irrigation | **Theoretical**: Irrigation efficiencies with example<br><br>**practical** : Types of irrigation efficiencies with solutions and examples | **theoretical:** Audio methods style Writing on the board Direct dialogue style<br><br>**practical** : Adapt tasks and reports | Conduct daily examinations. Assignment discussions |
| 7 | 2 Theoretical 3Practical | **Theoretical:** Enabling the student Understanding evaporation transpiration<br>**practical** : Explains methods measuring Water consumption | **Theoretical:** evaporation and transpiration<br><br>**practical** : Water requirements measurements | **theoretical:** Audio methods style Writing on the board Direct dialogue style<br><br>**practical** : Adapt tasks and reports | Conduct daily examinations. Assignment discussions |

| | | | | | |
|---|---|---|---|---|---|
| 8 | 2 Theoretical<br>3Practical | **Theoretical:**<br>Explains to student importance irrigation scheduling<br><br>**practical :**<br>Explains the basics of irrigation scheduling | **Theoretical:**<br>Irrigation scheduling<br><br>**practical :**<br>Methods of scheduling irrigation with solutions and examples | **theoretical:**<br>Audio methods style<br>Writing on the board<br>Direct dialogue style<br><br>**practical :**<br>Adapt tasks and reports | Conduct daily examinations.<br>Assignment discussions |
| 9 | 2 Theoretical<br>3Practical | **Theoretical:**<br>Shows the student importance Water requirement of crop<br><br>**practical :**<br>Empower student to Calculate the plant's water requirement water | **Theoretical:**<br>Water requirement of the crop<br><br>**practical :**<br>Calculate water requirements and solve examples | **theoretical:**<br>Audio methods style<br>Writing on the board<br>Direct dialogue style<br><br>**practical :**<br>Adapt tasks and reports | Conduct daily examinations.<br>Assignment discussions |
| 10 | 2 Theoretical<br>3Practical | **Theoretical:**<br>The student can Knowledge of irrigation cycle<br><br>**practical :**<br>Explains to student calculation of period between ritual and anothe | **Theoretical:**<br>Irrigation frequency Irrigation cycle<br><br>**practical :**<br>Calculating irrigation quantities and irrigation cycle | **theoretical:**<br>Audio methods style<br>Writing on the board<br>Direct dialogue style<br><br>**practical :**<br>Adapt tasks and reports | Conduct daily examinations.<br>Assignment discussions |
| 11 | 2 Theoretical<br>3Practical<br><br>2 Theoretical<br>3Practical | **Theoretical:**<br>The student shows how Water entry into the soil<br><br>**practical :**<br>Shows the student methods Instantaneous | **Theoretical:**<br>Water Infiltration<br><br>**practical :**<br>Infiltration measurement | **theoretical:**<br>Audio methods style<br>Writing on the board<br>Direct dialogue style<br><br>**practical :** | Conduct daily examinations.<br>Assignment discussions |

| | | | | | |
|---|---|---|---|---|---|
| 12 | 2 Theoretical 3Practical | Infiltration measurement<br><br>**Theoretical**: Explains importance of water drainag<br>**practical :** Shows understands drainage of wate | **Theoretical**: Types of agricultural land drainage and drainage networks<br><br>**practical** : Water drainage networks | Adapt tasks and reports<br><br>**theoretical:** Audio methods style Writing on the board Direct dialogue style<br><br>**practical :** Adapt tasks and reports | Conduct daily examinations. Assignment discussions |
| 13 | 2 Theoretical 3Practical | **Theoretical:** Enabling the student to Calculate the distance between Trocars<br>**practical :** Explains methods for calculating the distance of trocars | **Theoretical**: Determine the distance between trocars and examples<br><br>**practical :** Measure the distance between the trocars | **theoretical:** Audio methods style Writing on the board Direct dialogue style<br><br>**practical :** Adapt tasks and reports | Conduct daily examinations. Assignment discussions |
| 14 | 2 Theoretical 3Practical | **Theoretical:** bling the student<br><br>Trocar maintenance<br><br>**practical :** Shows practical maintenance methods | **theoretical**: Methods of maintaining water drainage networks<br><br>**practical :** Maintenance of water drainage channels | **theoretical:** Audio methods style Writing on the board Direct dialogue style<br><br>**practical :** Adapt tasks and reports | Conduct daily examinations. Assignment discussions |
| 15 | 2 Theoretical 3Practical | **theoretical:** Explains the design of trocars and their importance<br>**practical:** Explains the operation and design of trocars | **Theoretical:** Methods and design of modern trocars<br><br>**practical** : Covered and open trocars | **theoretical:** Audio methods style Writing on the board Direct dialogue style<br><br>**practical :** Adapt tasks and reports | Conduct daily examinations. Assignment discussions |

## 3. Course evaluation

| ت | Calendar methods | **Calendar appointment (weekly)** | Degree | Relative weight % |
|---|---|---|---|---|
| 1 | Theoretical final report + practical experience reports | Theoretically week (15)<br>Practically week 1-15 | 7 Theoretical + 6 practical | 13% |
| 2 | Quiz(1) | week (3) | 4+ Theoretical 2 practical | 6 % |
| 3 | Exam Midterm (Theoretical and practical | week (9) | 10 Theoretical+ 5 practical | 15% |
| 4 | Quiz(2) | week (12) | 4 + Theoretical 2 practical | 6% |
| 5 | Final practical test | Practical exam week | 20 | 20% |
| 6 | Final theoretical test | Theory exam week | 40 | 40% |
| | Total | | 100 | 100% |

## 4. Learning and Teaching Resources

| | |
|---|---|
| Required textbooks (curricular books, if any) | Irrigation... Dr. Issam Khudair Al-Hadithi |
| Main references (sources) | Irrigation and drainage book by Dr. Laith K |
| Recommended books and references (scientific journals, reports...) | SSSJ , WATER J . |
| Electronic References, Websites | https://doi.org/10.2136/sssabookser5.1.2ed |

**Dr. Faris akram salih Al-Wazzan**

**Theoretical teacher**

**Nour Jamal Hussein**

**Practical teacher**

**Dr. Ahmad Awad Talib**

**Head of the scientific committee**

**Dr. Talal Saeed Hameed**

**Head of the Department of agriculture extension**

جامعة الموصل
كلية الزراعة والغابات
قسم الارشاد الزراعي ونقل التقنيات