# Course Description Form of Soil Salinity

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| **1. Course Name:** | |
| **Soil Salinity** | |
| **2. Course Code:** | |
| **SOIS310** | |
| **3. Semester / Year:** | |
| **Second semester/ 2024-2025** | |
| **4. Description Preparation Date:** | |
| **15/1/2025** | |
| **5. Available Attendance Forms:** | |
| **Full time (theoretical lecture and practical lecture) weekly** | |
| **6. Number of Credit Hours (Total) / Number of Units (Total)** | |
| **5 hours (2 hours theoretical and 3 hours practical per week) for 14 weeks, number of units 3.5 units** | |
| **7. Course Administrator's Name (Mention All, If More Than One Name)** | |
| **Name: Dr. Hassan Hadi Mustafa**<br>Email : **hassanalalawy@uodiyala.edu.iq** | |
| **8. Course Objectives** | |
| Course Objectives:<br>Graduating students who are able to: | Studying the spread of salinity in Iraq and the world and its impact on agricultural production - identifying sources of salts and means of transporting them - classifying and naming salts affected soils - the effect of salinity on plant growth - quality of irrigation water – salinity control and methods of coexistence with it. |
| **9. Teaching and Learning Strategies** | |

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| Strategy | In-person lectures for 15 weeks, including two monthly exams, daily exams, and scientific reports |

**10. Course Structure**

## Theoretical part

| Week | Hours | Required learning outcomes | Unit or Subject | Learning Method | Evaluation Method |
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| **1** | **2** | Distribution and spread of salinity in Iraq and the world | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |
| **2** | **2** | Sources of salts components | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |
| **3** | **2** | Means and mechanisms for transporting salts | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |
| **4** | **2** | Soil formation conditions of salts affected soils and salt accumulation cycles. | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |
| **5** | **2** | Factors and conditions responsible for the formation and spread of salt-affected soils | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |
| **6** | **2** | Chemical and physical properties of salts accumulated in the soil | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |
| **7** | **2** | Chemical and physical properties of salts accumulated in the soil | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |
| **8** | **2** | Phases of salt accumulation in soil, cation exchange capacity in salts affected soils | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |
| **9** | **2** | Methods of expressing soil salinity | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |
| **10** | **2** | Classification and nomenclature of soils affected by salts | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |
| **11** | **2** | The effect of soil salinity on plant growth | Soil Salinity | **Lecture Dialogue & discussion Brainstorming** | Daily, monthly and final exams and daily reports |

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| **12** | **2** | Indicators used to determine plant resistance to salinity | Soil Salinity | **Lecture<br>Dialogue & discussion<br>Brainstorming** | Daily, monthly and final exams and daily reports |
| **13** | **2** | Methods used to increase plant resistance to salinity | Soil Salinity | **Lecture<br>Dialogue & discussion<br>Brainstorming** | Daily, monthly and final exams and daily reports |
| **14** | **2** | Irrigation water quality | Soil Salinity | **Lecture<br>Dialogue & discussion<br>Brainstorming** | Daily, monthly and final exams and daily reports |
| **15** | **2** | soil salinity controlling and ways to live with it | Soil Salinity | **Lecture<br>Dialogue & discussion<br>Brainstorming** | Daily, monthly and final exams and daily reports |

## Practical part

| Week | Hours | Required learning outcomes | Unit or Subject Name | Learning Method | Evaluation Method |
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| **1** | **3** | collection and preparation soil samples of salts affected soils | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **2** | **3** | Salinity measurement methods - saturated paste | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **3** | **3** | Salinity measurement methods - diluted suspension | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **4** | **3** | Salinity measurement methods - gravimetric method | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **5** | **3** | Calculating the amount of salts in the soil | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **6** | **3** | The effect of the type of salts on the germination of seeds of some plants | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **7** | **3** | The effect of the type of salts on the germination of seeds of some plants | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **8** | **3** | The effect of the type of salts on the germination of seeds of some plants | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **9** | **3** | The effect of the type of salts on the germination of seeds of some plants | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **10** | **3** | The effect of salinity on plant growth | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **11** | **3** | Phenotypic changes in plants due to salinity | Soil Salinity | **Observation<br>Dialogue & discussion** | Daily, monthly and final exams and daily reports |

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| **12** | **3** | Evaluation of irrigation water quality | Soil Salinity | **Observation Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **13** | **3** | Irrigation water classification: USDA system | Soil Salinity | **Observation Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **14** | **3** | Irrigation water classification: FAO system. | Soil Salinity | **Observation Dialogue & discussion** | Daily, monthly and final exams and daily reports |
| **15** | **3** | The relationship between salinity and sodicity | Soil Salinity | **Observation Dialogue & discussion** | Daily, monthly and final exams and daily reports |

## 11. Course Evaluation

Examination Monthly & daily exams with discussion questions inside the lecture.
The degree of participation in the questions related to the subject.

## 12. Learning and Teaching Sources

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| Required Textbooks (Curricular Books, If Any) | A. Al-Zubidi. 1989, Soil Salinity-Theoritical and Practical Fundumentals, Ministry of Higer Education, Iraq. |
| Main References (Sources) | |
| Recommended Books and References (Scientific Journals, Reports...) | FAO reports |
| Electronic References, Websites | Internet |