

Course Description Form of Soil relationship with water and plants

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| 1. Course Name: | |
| Soil relationship with water and plants | |
| 2. Course Code: | |
| SOIM410 | |
| 3. Semester / Year: | |
| First 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: Basem R.Bader Email: basemrbader@uodiyala.edu.iq | |
| 8. Course Objectives | |
| Course Objectives: Graduating students who are able to: | It aims to introduce students to the relationship of soil with water and plants, a science that seeks to identify and identify the basic concepts of the relationship of soil with water and plants 1 -Learn about the salt balance between the soil-plant-atmosphere system and how this affects it 2 -Physiological processes and plant growth. 3 -The different stresses that the plant is exposed to and how to mitigate those stresses. 4 -The relationship of organic matter and microorganisms in plant growth The article deals with a study 1 -To familiarize the student with the concept of the relationship between soil, water and plants |

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| | <p>2 -The student classifies the different stresses and their effect on plant growth</p> <p>3 -The student should separate between physical and chemical properties</p> <p>4 -The student analyzes the amount of nutrients in the soil and the preservation of soil from pollution</p> <p>5 -The student should understand the relationship of soil salinity and its effect on plant growth, roots, growth and uptake</p> <p>5- Soil salinity relationship and its effect on plant growth, roots growth and uptake</p> |
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9. Teaching and Learning Strategies

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| Strategy | In-person lectures for 14 weeks, including two monthly exams, daily exams, and scientific reports |
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10. Course Structure

Theoretical part

| Week | Hours | Required learning outcomes | Unit or Subject | Learning Method | Evaluation Method |
|------|-------|--|---|---|--|
| 1 | 2 | Water, its properties and functions, the physical properties of the soil and their effect on plant growth | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 2 | 2 | Chemical properties of soil and their effect on plant growth | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 3 | 2 | Chemical properties of soil and their effect on plant growth and the relationship of water content to soil water potential | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 4 | 2 | Water and water potential in the soil-plant-atmosphere system | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 5 | 2 | Water and water potential in the soil-plant-air system and the use of mathematical models | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 6 | 2 | First exam | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |

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| 7 | 2 | The various stresses to which the plant is exposed and stress relief | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 8 | 2 | The relationship of organic matter and soil microbiota to plant growth | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 9 | 2 | Salinity and its effect on plant growth | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 10 | 2 | Root growth and function | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 11 | 2 | The efficiency of water use by plants and influencing factors | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 12 | 2 | Physical properties and their relationship to plant growth | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 13 | 2 | Fertility properties and their relationship to plant growth | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 14 | 2 | Movement of water from soil to plants | Soil relationship with water and plants | Lecture Dialogue & discussion Brainstorming | Daily, monthly and final exams and daily reports |
| 15 | 2 | Dissolved ions and their relationship with soil and plants Growth regulators and their relationship to plant growth | Soil relationship with water and plants | Lecture Dialogue & discussion 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 | Training students to compare the growth and development of root systems in soils of different textures. | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |

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| 2 | 3 | An experiment to determine the effect of tissue on plant growth and root development | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 3 | 3 | Taking measurements for the experiment | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 4 | 3 | Writing the report and discussing the results | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 5 | 3 | The effect of bulk density on root growth and development (soil compaction) | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 6 | 3 | Experiment to know the effect of compaction on plant growth and root development | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 7 | 3 | Lecture Dialogue & discussion Brainstorming | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 8 | 3 | Lecture Dialogue & discussion Brainstorming | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 9 | 3 | Lecture Dialogue & discussion Brainstorming | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 10 | 3 | Lecture Dialogue & discussion Brainstorming | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 11 | 3 | Lecture Dialogue & discussion Brainstorming | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 12 | 3 | Lecture Dialogue & discussion Brainstorming | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
| 13 | 3 | Lecture Dialogue & discussion Brainstorming | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |

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| 14 | 3 | Lecture Dialogue & discussion Brainstorming | Soil relationship with water and plants | Observation Dialogue & discussion | Daily, monthly and final exams and daily reports |
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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) | The relationship of soil, water and plants) |
| Main References (Sources) | Iraqi academic scientific journals. |
| Recommended Books and References (Scientific Journals, Reports...) | Soil Science Society Of America Library Genesis. |
| Electronic References, Websites | Soil Science Society Of America Library Genesis |