# Course Description Form

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| 1. Course Name: |
| Soil Pollution and Water |
| 2. Course Code: |
| SOPW351 |
| 3. Semester / Year: |
| First Semester / 2024-2025 |
| 4. Description Preparation Date: |
| 1 / 9 / 2024 |
| 5. Available Attendance Forms: |
| Presence |
| 6. Number of Credit Hours (Total) / Number of Units (Total) |
| 2 Theory + 3 Practical / 3.5 units |
| 7. Course administrator's name (mention all, if more than one name) |
| Name: Dr. Qahtan Darwish Essa<br>Email: qahtan_darwish@uomosul.edu.iq |
| 8. Course Objectives |

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| **Theory:**<br>-Enabling the student to understand the concepts of soil and water pollution<br>-Enabling the student to understand the resources of soil and water pollution<br>- Introducing the student to methods for treating contaminated soil<br>-Enable the student to calculate the level and degree of soil and water pollution | **Practical :**<br>- Enabling the student to recognize th most important methods for calculat the degree of pollution, assessing level of pollution, and measuring so characteristics that are conside standards for soil and water quality |

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| 9. Teaching and Learning Strategies | |
| **Strategy** | - Interactive lecture, Brainstorming, - Dialogue and discussion,<br>- Assigning tasks and reporting<br>- Assigning group work to reveal leadership skills |

10. Course Structure

| Week | Hours | Required Learning Outcomes | Unit or subject name | Learning method | Evaluation method |
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| 1 | Theory | Theory:<br>a1: The student identifies pollution to the ecosystem And pollutants | Theory<br>Entrance to pollution For the ecosystem | Theory :<br>-Auditory methods, | Exams, Homework, Reports. |
| | 3 Pract. | b2: The student Learns about pollution | Definition of pollution and pollutants | Assigning tasks and reports | Exams, Homework, Reports. |

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| | | And pollutants | | | |
| 2 | Theory . | a2: Entrance to pollution For the ecosyste | The concept of pollution and its sources Its types and negative effect | -Auditory methods, - Style of writing on the blackboa - Direct dialogue style | Exams, Homework, Reports |
| | 3 Pract. | a13:Definition of pollution and pollutants | The effect of pollution on Human, animal Plant, | Assigning tasks and reports | Exams, Homework, Reports |
| 3 | 2theory | Theory: c1: The student learns about the types Soil contamination | Theory: Types of soil pollution | - Style of writing on the blackboa - Direct dialogue | Exams, Homework, Reports |
| | 3 pract. | b3: The student is familiar with toxic gases | dust, toxic gase Oxides Sulfur oxides Nitrogen, sulfid Hydrogen | Assigning tasks and reports | Exams, Homework, Reports |
| 4 | 2theory | a3: The student recognizes a gas Nitrogen and its degradation i the environment | Nitrogen gas and its cycle In the environment | -Auditory methods, - Style of writing on the blackboa - Direct dialogue style | Exams, Homework, Reports |
| | 3pract. | b4: The student is familiar with a pollution | Air pollution, it sources, Hydrocarbons | Assigning tasks and reports | Exams, Homework, Reports |
| 5 | 2theory | a4: The student learns about each cycle of oxygen and carbon and sulfur in nature | Oxygen and carbon cycle and sulfur in nature | - Style of writing on the blackboa - Direct dialogue style | Exams, Homework, Reports |
| | 3 pract. | b5:The student ge to know Water filtration project | Visit a water filtration proje in Al-Rashedia | Assigning tasks and reports | Exams, Homework, Reports |
| 6 | 2theory | a5: The student gets to know Chemical contamination of soil agricultural samples | Chemical contamination soil agricultura | -Auditory methods, - Style of writing on the blackboa - Direct dialogue style | Exams, Homework, Reports |
| | 3pract. | b6:The student examines water samples | Measurement o temporary hardship | Assigning tasks and reports | Exams, Homework, Reports |

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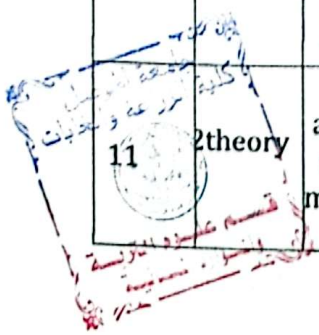
| | | | and permanent | | |
| 7 | 2theory | b1: The student identifies the risks of pollution on plant growth and human healt | Chemical pollution and it impact on plant growth and human health | -Auditory methods, - Style of writing on the blackboa - Direct dialogue style | Exams, Homework, Reports |
| | 3pract. | b7: The student measures salinity Soil acidity | Calculate the salinity of wate and acidity calculation and basal | Assigning tasks and reports | Exams, Homework, Reports |
| 8 | 2theory | a6:The student masters processing Chemical polluti | Treating Chemical pollution | - Style of writing on the blackboa - Direct dialogue style | Exams, Homework, Reports |
| | 3pract. | b8:The student measures calcium and magnesium | Measure calcium and magnesium with water | Assigning tasks and reports | Exams, Homework, Reports |
| 9 | 2theory | a7: The student learns about pathogenic microbes in the soil | Pathogenic microbes For humans and animals in the soil | -Auditory methods, | Exams, Homework, Reports |
| | 3pract. | b9:The student Identifies methods of measuring pollution | Methods of Measuring pollution of water and soil | Assigning tasks and reports | Exams, Homework, Reports |
| 10 | 2theory | a8: The student is familiar with soil pollution with heavy meta | Soil contamination with heavy met | -Auditory methods, - Style of writing on the blackboa - Direct dialogue style | Exams, Homework, Reports |
| | 3pract. | c3:The student learns about pollution With powders, fertilizers and waste | Pollution with washing powders, fertilizers animal wastes | Assigning tasks and reports | Exams, Homework, Reports |
| 11 | 2theory | a9:The student masters processi minated lands | Treatment of contaminated lands | -Auditory methods, - Style of writing on the blackboa - Direct dialogue | Exams, Homework, Reports |



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| | | | | style | |
| | 3pract. | a14:The student gets to know Spectrometer | Visible light Spectrometer and the elements it measures | Assigning tasks and reports | Exams, Homework, Reports |
| 12 | 2theory | a10: The student learns about pollution Water | Water Pollution | -Auditory methods, | Exams, Homework, Reports |
| | 3pract. | b10:The student measures the vital requiremen and The chemistry in water | Measurement of COD and BOD | Assigning tasks and reports | Exams, Homework, Reports |
| 13 | 2theory | a11: The student judges soil pollution | Modern standards for evaluation Soil pollution level | -Auditory methods, - Style of writing on the blackboa - Direct dialogue style | Exams, Homework, Reports |
| | 3pract. | c4:The student gets to know Atomic Absorption device | Absorption device Atomic matter and its components | Assigning tasks and reports | Exams, Homework, Reports |
| 14 | 2theory | a12: The student learns methods Pesticide transmission | Methods of transmission of pesticides In the soil | -Auditory methods, - Style of writing on the blackboa - Direct dialogue style | Exams, Homework, Reports |
| | 3pract. | b11:The student learns about pollution With pesticides | Pesticide contamination | Assigning tasks and reports | Exams, Homework, Reports |
| 15 | 2theory | c2: The student is familiar with the effect of pesticides on organisms | The effect of pesticides on Activity of microorganism in soil | -Auditory methods, - Style of writing on the blackboa - Direct dialogue style | Exams, Homework, Reports |
| | 3pract. | b12:The student explains the risks Radioactive isotope contamination | Risks of isotope contamination Radioactive | Assigning tasks and reports | Exams, Homework, Reports |
| 11. Course Evaluation | | | | | |

| | Evaluation Methods | Evaluation Date | Degree | Relative weight % |
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| | Final report theory + pract. Report | Theory 15 weeks Pract. 1-15 week | 7 Theory + 6 pract. | % 13 |
| | Short exam (1) | Week (3) | 4 Theory + 2 pract. | % 6 |
| | Half exam ( theory + pract.) | Week (9) | 10 Theory + 5 pract. | % 15 |
| | Short exam (2) | Week (12) | 4 Theory + 2 pract. | % 6 |
| | Final exam (practical) | Exam pract. | 20 | % 20 |
| | Final exam (theory) | Exam theory | 40 | % 40 |
| | | | 100 | % 100 |

| 12. Learning and Teaching Resources | |
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| Required textbooks (curricular books any) | Book ( Soil pollution and water) Dr. Mahmood Al-Jumaili and Sal Hadi (2018) |
| Main references (sources) | Book ( Soil pollution and water ) Dr. Shikhani, Dr. Mohammad Sam Dr Aiad Foad (2015) |
| Recommended books and references (scientific journals, reports...) | |
| Electronic References, Websites | |

Teacher of Theory : Dr. Qahtan Darwish Essa

Teacher of Practical : Mr. Ahmed Sameer Ghanim

Chair of the Scientific Committee : Dr. Abd Al-Qader Abash Sbak

Head of the Dept. of Soil Sciences and Water Resources : Dr Khalid Anwar Khalid