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| EXC-01-02-02A | **Form Number** | **Form:**  **Course Syllabus** |
| 2/3/24/2022/2963  05/12/2022 | **Issue Number and Date** |
|  | **Number and Date of Revision or Modification** |
| 2/3/24/2023 | **Deans Council Approval Decision Number** |
| 23/01/2023 | **The Date of the Deans Council Approval Decision** |
|  | **Number of Pages** |

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| **1.** | **Course Title** | Soil and Environmental |
| **2.** | **Course Number** | 0634430 |
| **3.** | **Credit Hours (Theory, Practical)** | 2 |
| **Contact Hours (Theory, Practical)** | 2 lectures A week |
| **4.** | **Prerequisites/ Corequisites** | 0604223 &0644221 |
| **5.** | **Program Title** | Bachelor Land, Water and Environment |
| **6.** | **Program Code** | 4 |
| **7.** | **School/ Center** | Agriculture |
| **8.** | **Department** | Land, Water and Environment |
| **9.** | **Course Level** | Undergraduate-BSc |
| **10.** | **Year of Study and Semester (s)** | Spring 2023 /2024 |
| **11.** | **Other Department(s) Involved in Teaching the Course** | -------- |
| **12.** | **Main Learning Language** | English |
| **13.** | **Learning Types** | ☐Face to face learning ☐Blended √ Fully online |
| **14.** | **Online Platforms(s)** | ☐Moodle √ Microsoft Teams |
| **15.** | **Issuing Date** | 4/7/2024 |
| **16.** | **Revision Date** | 9/7/2024 |

**17. Course Coordinator:**

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| Name: Areej AL Khreisat Contact hours: 12:30-13:30 Monday &Wednesday  Office number: 57 1st floor Phone number:22444  Email: [a.alkhreisat@ju.edu.jo](mailto:a.alkhreisat@ju.edu.jo) |

**18. Other Instructors: --------**

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**19. Course Description:**

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| Soil and Environment is an upper division course that intends to enable senior students of the Department of Land, Water and Environment to integrate academic knowledge into an overall know-how skills of preventing soil contamination, managing contaminated soils, reducing contaminant emission from polluted soils and remediation of contaminated or degraded soils. Nature of soil-contaminants and soil-contaminating chemicals and biological materials are essential components of this course. Because of the interdisciplinary nature of this course, students are requested to participate in data generation in the form of term papers. Grades will be distributed on exams, term papers and other forms of active participation. |

**20. Program Intended Learning Outcomes:** Land, Water and Environment BSc Program ILOS

1. Demonstrate comprehensive understanding of the scientific and theoretical knowledge of land, water and environment.
2. Contribute to agricultural development, as well as food and water security.
3. Demonstrate problem solving skills and well developed linguistic and communication skills while upholding professional ethics
4. Assess land characteristics and their suitability for different agricultural uses.
5. Tackle basic problems of water, land and agricultural environment.
6. Analyse and interpret soil and water quality parameters.
7. Use sound scientific principles for the determination of crop water requirement, and design of irrigation systems for the proper management of agricultural water.
8. Determine the optimal use of water and land to ensure the sustainability of resources and the environment.
9. Develop​ innovative solution for tackling the adverse effects of water scarcity caused by climate change and desertification​

**21. Course Intended Learning Outcomes:**

To enable senior students integrating previous knowledge of soil science in a web of environment management skills.

Build capacity of self-learning in interdisciplinary scientific fields Upon completion of the course, the student will achieve the following ***intended learning outcomes***:

**A. Knowledge and Understanding**

A1. - Learn the relation between different fields of basic soil sciences.

A2. Understand the relation between soil science and environmental sciences.

**B. Intellectual, Analytical and Cognitive Skills:**

B1- Students acquire analytical skills of predicting possible environmental impacts of soil management activities on related environment fields

B2.-Students acquire technical skill sufficient to serve as environment consultant

**C. Subject- Specific Skills:**

C1. Transferring and applying diagnostic and creative skills in a range of contexts.

C2. Students acquire to integrate their acquired academic knowledge into an overall know-how skill in a range of contexts for instance, prevention of soil contamination, management of contaminated soils, reduction of contaminants emission from polluted soils into neighboring water bodies or ambient air, and Remediation of contaminated or degraded soils.

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| --- | --- | --- | --- | --- | --- | --- |
| Course ILOs | The learning levels to be achieved | | | | | |
| Remembering | Understanding | Applying | Analysing | evaluating | Creating |
| 1.A1 | √ | √ | √ |  |  |  |
| 2.A2 | √ | √ | √ |  |  |  |
| 3.B1 | √ | √ | √ |  |  |  |
| 4.B2 | √ | √ | √ | √ | √ |  |
| 5.C1 |  |  | √ | √ | √ |  |
| 6.C2 |  |  | √ | √ | √ |  |

**22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Program ILOs  Course ILOs | ILO (1) | ILO (2) | ILO (3) | ILO (4) | ILO (5) | ILO (6) | ILO (7) | ILO (8) | ILO (9) |
| A1- Learn the relation between different fields of basic soil sciences. | √ |  | √ |  |  |  |  |  |  |
| A2- Understand the relation between soil science and environmental sciences. | √ |  | √ |  |  |  |  |  |  |
| B1- Students acquire analytical skills of predicting possible environmental impacts of soil management activities on related environment fields | √ | √ |  | √ |  | √ |  | √ |  |
| B2- Students acquire technical skill sufficient to serve as environment consultant | √ |  |  |  |  | √ |  | √ |  |
| C1- Transferring and applying diagnostic and creative skills in a range of contexts. |  |  |  | √ |  | √ |  | √ |  |
| C2-. Students acquire to integrate their acquired academic knowledge into an overall know-how skill in a range of contexts for instance, prevention of soil contamination, management of contaminated soils, reduction of contaminants emission from polluted soils into neighboring water bodies or ambient air, and Remediation of contaminated or degraded soils. | √ | √ | √ | √ |  | √ |  | √ |  |

**23. Topic Outline and Schedule:**

| **Week** | **Lecture (1.0 hr)** | **Topic (Number and contents)** | **ILO of the course** | **Learning Methods**  **(Platform)** | **Synch. / Asynch. Lecturing** | **Evaluation Methods\*** | **Resources** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1  2 | 1,2  3,4 | Definitions of soil (pedological, edaphological and environmental perspectives), ecology and environment. | A1&A2 | Fully online | S | Interactive questions, quizzes and homeworks | R1-R3 |
| 3  4 | 5,6  7,8 | Soil physical and chemical properties and their environmental roles. | A &B | Fully online | S | Interactive questions, quizzes and homeworks | R1-R3 |
| 5 | 9,10 | Soil Ecology | A &B | Fully online | S | Interactive questions, quizzes and homeworks | R1-R3 |
| 6  7 | 11,12  13,14 | Soil Stressors | A &B | Fully online | S | quizzes and homeworks | R1-R3 |
| 8  9 | 15,16  17,18 | Mobility and Attenuation of Contaminants | A,B &C | Fully online | S | Interactive questions, QUIZ | R1-R3 |
| 10  11 | 19,20  21,22 | Organic Pollutants of Soil and Agricultural Systems | B &C | Fully online | S | Interactive questions, ,quizzes and homeworks | R1-R3 |
| 12 | 23 | **Mid-term exam** | A,B &C | **At UOJ** |  |  |  |
| 13 | 24,25 | Bioremediation of contaminated soils. | B &C | Fully online | S | Interactive questions, QUIZ | R1-R3 |
| 14  15 | 26  27 | Term papers presentations | A, B &C | Fully online | S | Term papers presentations | R1-R3 |
| 16 | 28 | **Final Hour Exam** |  | **At UOJ** |  |  | R1-R3 |

**24. Evaluation Methods:**

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

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| --- | --- | --- | --- | --- | --- |
| **Evaluation Activity** | **Mark** | **Topic(s)** | **ILO/s Linked to the Evaluation activity** | **Period (Week)** | **Platform** |
| Quizzes, homework | 10 | All topics | All | During semester | teams |
| Mid-term exam | 30 | Beginning to Organic Pollutants | A,B,D | 12 | At University |
| Term paper | 20 | All topics | A2,B1,C,D1 | 14-15 | team |
| Final Exam | 40 | All topics | All | 16 | At University |

**25. Course Requirements:**

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| Students should have internet access and an account on Microsoft team’s platform. |

**26. Course Policies:**

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| A- Attendance policies:  B- Absences from exams and submitting assignments on time:  C- Health and safety procedures:  D- Honesty policy regarding cheating, plagiarism, misbehavior:  E- Grading policy:  F- Available university services that support achievement in the course: |

**27. References:**

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| **A- Required books:**  R1 Yong,R.N, Nakano, M. and Pusch. R. 2018. Environmental Soil Properties and Behaviour. Boca Raton. CRC Press.1ST edition.450pp.  R2 Freedman B.2018. Environmental Science. Dalhousie University Libraries Digital Editions. 823pp.  R3 All handed material.  **B- Recommended materials and media:**  <https://openknowledge.fao.org/server/api/core/bitstreams/fe5df8d6-6b19-4def-bdc6-62886d824574/content/src/html/chapter-14-ref.html>  https://eponline.com/articles/2013/09/19/soil-remediation-and-the-environment.aspx |

**28. Additional information:**

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| 1- Attendance is obligatory.  2- Any disturbance to class lectures will result in expulsion of the student and considering him absent from the lecture. Repetition of this behavior will subject the student for further actions according to UOJ regulations. |

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| Name of the Instructor or the Course Coordinator:    **Areej AL Khreisat Areej** | Signature: | Date:  7/7/2024 |
| Name of the Head of Quality Assurance Committee/ Department  …………………………………………………. | Signature:  …………...……………… | Date:    ……..………… |
| Name of the Head of Department  …………………………………………………. | Signature:  …………...……………… | Date:  ……..………… |
| Name of the Head of Quality Assurance Committee/ School or Center  …………………………………………………. | Signature:  …………...……………… | Date:  ……..………… |
| Name of the Dean or the Director  …………………………………………………. | Signature:  …………...……………… | Date:  ……..………… |