# Jordan University of Science and Technology

## Faculty of Agriculture

## Plant Production Department

PP701 Experimental Design And Statistical Analysis

Second Semester 2023-2024

| Course Catalog |
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| 3 Credit Hours. The goal of this course is to present a variety of experimental designs, it?s advantages, disadvantages, and the uses of each type of design, to outline the procedure for constructing the design, and to consider the analysis and interpretation of data from each type. This course provides statistical and biometrical procedures for designing, conducting, analyzing, and interpreting field experiments addressing the most important research topics in agriculture. |
| **Teaching Method:** Blended |

| Text Book | |
|---|---|
| **Title** | Fundamentals of Statistical Experimental Design and Analysis |
| **Author(s)** | Robert G. Easterling Cedar Crest, New Mexico, USA |
| **Edition** | 1st Edition |
| **Short Name** | 1 |
| **Other Information** | |

| Instructor | |
|---|---|
| Name | **Prof. Zakaria Al-Ajlouni** |
| Office Location | - |
| Office Hours | Sun : 08:30 - 10:30<br>Mon : 13:30 - 14:30<br>Tue : 08:30 - 10:30<br>Wed : 13:30 - 14:30 |
| Email | ziajlouni@just.edu.jo |

| Class Schedule & Room |
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Section 1:
Lecture Time: Wed : 11:30 - 12:30
Room: U

Section 3:
Lecture Time: Mon : 11:30 - 12:30
Room: U

| Tentative List of Topics Covered | | |
|---|---|---|
| **Weeks** | **Topic** | **References** |
| Week 1 | Introduction, Definition, importance of Expt. Design, types of experiments, steps in experimentation | |
| Week 2 | Some basic concepts. (normal distribution, statistical notation, t-distribution, confidence limits, f-distribution | |
| Week 3 | Analysis of variance and t-test, the completely randomize design (CRD). | |
| Week 4 | Means separation (LSD, DMRT, trend comparison, class comparison, orthogonal contrast | |
| Week 5 | The randomized complete block design (RCBD). | |
| Week 6 | The completely randomize design with sub sampling | |
| Week 7 | Latin squire design | |
| Week 8 | Factorial experiments in CR Design. | |
| Week 9 | Factorial experiments in RCB Design. | |
| Week 10 | 2x2x2 arrangement in RCB Design. | |
| Week 11 | Split-plot Design, Split-split-plot Design. | |
| Week 12 | Split block (Strip-plot) design. | |
| Week 13 | Repeated measurements design. | |
| Week 14 | Combined analysis of several experiments. | |
| Week 15 | Correlation and regression, agronomic trials, variety trials, pasture trials | |

| **Mapping of Course Outcomes to Program Outcomes** | **Course Outcome Weight (Out of 100%)** | **Assessment method** |
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|---|---|---|
| Demonstrate a comprehensive understanding of fundamental principles in experimental design, including variables, controls, and randomization. | 20% | |
| Create and illustrate effective experimental frameworks to assess specific hypotheses in various agricultural sectors. | 20% | |
| Utilize appropriate statistical methods to analyze experimental data and accurately interpret results. | 30% | |
| Test real-life theoretical concepts and improve experimental design and statistical analysis skills. | 30% | |

| Relationship to Program Student Outcomes (Out of 100%) | | | | | | |
|---|---|---|---|---|---|---|
| PLO1 | PLO2 | PLO3 | PLO4 | PLO5 | PLO6 | PLO7 |
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| Policy | |
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| examination policy | The goal of this examination policy is to create a well-organized and beneficial learning environment for students. To ensure their success in the course, significant focus is placed on providing them with the opportunity to become familiar with these guidelines. |

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