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**Department of ….Statistics and Informatics**

**College of ..Administration and Economics.**

**University of … Salahaddin.**

**Subject: Hypothesis Testing.**

**Course Book : *4th stage***

**Lecturer's name: Asst.Prof.Dr. Omiad Saber Abdullah.**

 **& Alan Ghafur Rahim (PH.D. Student).**

**Academic Year: 2022 - 2023**

**Course Book**

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| **1. Course name** | **Hypothesis Testing** |
| **2. Lecturer in charge** | **Dr. Omiad S. Abdullah & Alan Gh. Rahim**  |
| **3. Department/ College** | **Department of Statistics & Informatics/ College of Administration and Economics.** |
| **4. Contact** | **e-mail:** omiad.abdullah@su.edu.krd alan.rahim@su.edu.krd**Tel: (optional)**  |
| **5. Time (in hours) per week**  | **For example Theory: 3 hours** **Practical: 0**  |
| **6. Office hours** | **16 hours per week** |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | **I have earned a Master's Degree in Statistics from Statistics Department – Salahaddin University-Erbil. I have been teaching in Statistics department at Salahaddin University since 2011. I have taught the following subject: Probability Theory, Biostatistics,Statistics, Spss, Statistical Inference.** |
| **9. Keywords** | **Hypothesis, t test, One way ANOVA, Multiple comparison, and Two way ANOVA.** |
| **10. Course overview:**  **Want to master the Basics of Hypothesis Testing? This course is carefully designed for students who are struggling with Statistics, for those who are not quantitatively inclined, and complete beginners in Statistics.****After completing this course, you will have a complete understanding of Hypothesis Testing for population means and will be able to easily answer exam-style questions. I teach using intuitive step-by-step explanations and assume students have absolutely no background in Statistics.** |
| **11. Course objective:****Hypothesis testing is as old as the scientific method and is at the heart of the research process. Research exists to validate or disprove assumptions about various phenomena. The validation process involves testing; in this context, we will explore hypothesis testing.****There are various important tests that students have to learn in this course before they go to the next stages. Students can learn these things such as understanding types of data, and appropriate statistical tools for their analysis, describing data using tables, graphs, or numbers, testing hypotheses in different datasets, writing a report depending on the results, using statistics for generalizations and decision making, and the last, evaluate statistical conclusions based on experimental design.** |
| **12. Student's obligation****The student commitment the lecture times.****• Commitment to the rules of the class.****• Solve the homework of which was given.**  |
| **13. Forms of teaching****A course with a large proportion of its teaching taking place in lectures will need to have a high level of essential interest to students to keep them engaged .there are a lot of talks about what is good teaching technique in academic circle , they often come out with different forms such as. Classical teaching with blackboard. Power point presentations for the head titles and definitions and summary of conclusions, classification of materials and any other illustrations, students will be asked to prepare reports on statistical topics and they should participate as much as possible in lectures discussions. .** |
| **14. Assessment scheme****Allocation of degree examinations as follows: -**1. **40 degree of yearly seek (20 per exam)**

**The first course (15) degree to action examination** **(5) degree to activity & conducting quiz.****The second course (15) degree to action examination** **(5) degree to activity & conducting quiz.**1. **60 degree final exam (first round or the second)**
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| **15. Student learning outcome:** **This course will focus on theory and implementation of hypothesis testing, especially as it relates to applications in data science. Students will learn to use hypothesis tests to make informed decisions from data. Special attention will be given to the general logic of hypothesis testing, error and error rates, power, simulation, and the correct computation and interpretation of p-values. Attention will also be given to the misuse of testing concepts, especially p-values.** |
| 1. **Bernard Rosner. Fundamentals of Biostatistics, Seventh Edition. USA: Brooks/Cole, Cengage Learning; 2011.**
2. **Rowe Philip. Essential statistics for the pharmaceutical sciences. England: John Wiley & Sons Ltd; 2007.**
3. **K, park. Park's textbook of preventive and social medicine, nineteenth edition. India: m/s Banarsidas Bhanot; 2007.**
4. **Marcello Pagano & Kimberlee Gauvreau. Principles of Biostatistics, Second edition. New York: Taylor & Francis Group,LLC;2018**
5. **Marc M. , Mario F. & Jayson Roy. Biostatistics for the Biological and Health Sciences, Second edition. U.S.A: Pearson Education, Inc;2018**
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| **17. The Topics:** | **Lecturer's name:** |
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|  | Subject |
| Week 1 | * What is Hypothesis Testing?
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| Week 2 | * Null and Alternative Hypotheses.
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| Week 3 | * Normality testing.
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| Week 4 | * + Type I Error and Type II Error.
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| Week 5 | * One-Sample t-Test.
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| Week 6 | * Independent Sample t-Test.
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| Week 7 | * Paired Sample t-Test.
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| Week 8 | * One Way ANOVA.
 |
| Week 9 | * Multiple Comparison.
 |
| Week 10 | * Least Significant Difference (LSD).
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| Week 11 | * Duncan’s Multiple Range test.
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| Week 12 | * Dunnett’s test.
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| Week 13 | * Two Way ANOVA.
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| Week 14 | * Exam first midterm.
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| Week 15 | * Chi-Square Test.
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 | Dr. Omiad Saber. & Alan Ghafur.  |
| **18. Practical Topics (If there is any)** |  |
| In this section The lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture. | Lecturer's nameDr. Omiad Saber. & Alan Ghafur. ex: (3 hrs) |
| **19. Examinations:** |
| **20. Extra notes:** |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ** .‌‌  |