Department of Statistics & Operation Research-King Saud University

First Semester 1442/1443

Nonparametric Statistics Methods

(STAT 333)

Instructor: Alanoud Alzughaibi Office: 3rd office 66

Email: aalzughibi@ksu.edu.sa

**COURSE SYLLABUS**

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| **Week** | **Title** |
| Week 1 | **Part I:**Introduction, Review of Some Parametric Tests  **Part II:**The Nonparametric Statistical Procedures, State the Null and Research Hypotheses, Set the Level of Risk (or the Level of Significance) Associated with the Null Hypothesis, Choose the Appropriate Test Statistic, Compute the Test Statistic, Determine the Value Needed for Rejection of the Null Hypothesis Using the Appropriate Table of Critical Values for the Particular Statistic, Compare the Obtained Value with the Critical Value, Interpret the Results,Reporting the Results, Ranking Data, Ranking Data with Tied Values, Counts of Observations, Practice Questions, Solutions to Practice Questions. |
| Week 2 | **Part I:**Describing Data and the Normal Distribution, Computing and Testing Kurtosis and Skewness for Sample  Normality, Sample Problem for Examining Kurtosis  **Part II:**Sample Problem for Examining Skewness,Examining  Skewness and Kurtosis for Normality Using SPSS.  **Part III :**Computing the Kolmogorov–Smirnov One-Sample Test, Sample Kolmogorov–Smirnov One-Sample Test |
| Week 3 | **Part I:**Performing the Kolmogorov–Smirnov One-Sample TestUsing SPSS, Practice Questions, and Solutions to  Practice Questions.  **Part II:**Computing the Wilcoxon Signed Rank Test Statistic, Sample Wilcoxon Signed Rank Test (Small Data Samples),  **Part III:**Confidence Interval for the Wilcoxon Signed Rank Test, Sample Wilcoxon Signed Rank Test (SPSS). |
| Week 4 | **Part I:**Computing the Sign Test, Sample Sign Test (Small Data Samples).  **Part II:**Performing the Wilcoxon Signed Rank Test and the Sign Test Using SPSS, Interpret the Results from the SPSS  Output Window, Practice Questions, Solutions to Practice Questions.  **Part III:**Computing the Mann−Whitney U-Test Statistic, Sample Mann−Whitney U-Test (Small Data Samples), |
| Week 5 | **Part I:**Sample Mann−Whitney U-Test (SPSS),Computing the Kolmogorov–Smirnov Two-Sample Test  Statistic, Sample Kolmogorov–Smirnov Two-Sample Test.  **Part II:**[Performing the Mann–Whitney U-Test and the Kolmogorov–Smirnov Two-Sample Test Using SPSS,](#_bookmark43)  **Part III:**[Interpret the Results from the SPSS Output Window,](#_bookmark45) [Practice Questions,](#_bookmark48) [Solutions to Practice Questions](#_bookmark49) |
| Week 6 | **Part I:**Computing the Friedman Test Statistic, [Sample Friedman’s Test (Small Data Samples without Ties)](#_bookmark52)  **Part II:**[Sample Friedman’s Test (Small Data Samples with Ties),](#_bookmark53)  **Part III:**[Performing the Friedman Test Using SPSS,](#_bookmark54) [Sample Friedman’s Test (SPSS), **Part II:**Practice Questions,](#_bookmark55) Solutions to Practice Questions. |
| Week 7 | Part I: Computing the Kruskal–Wallis H-Test Statistic  Part II: Sample Kruskal–Wallis H-Test (Small Data Samples).  **Part I:**Performing the Kruskal–Wallis H-Test Using SPSS, Sample Kruskal–Wallis H-Test (SPSS), **Part II:**Practice Questions, Solutions to Practice Questions. |
| Week 8 | **Part I:**The χ2 Goodness-of-Fit Test, [Computing the χ2 Goodness-of-Fit Test Statistic, Sample χ2 Goodness-of-Fit Test (Category Frequencies Equal),](#_bookmark82)  **Part II:**[Sample χ2 Goodness-of-Fit Test (Category Frequencies Not Equal),](#_bookmark82) [Performing the χ2 Goodness-of-Fit Test Using SPSS.](#_bookmark83) |
| Week 9 | **Part I:**[The χ2TestforIndependence,](#_bookmark84) [Computing the χ2TestforIndependence,](#_bookmark85)  **Part II:**[Sample χ2TestforIndependence,](#_bookmark86) [Performing the χ2Test for Independence UsingSPSS.](#_bookmark87) |
| Week 10 | **Part I:**[The FisherExact Test,](#_bookmark88) [Computing the Fisher Exact Test for 2 ×2Tables,](#_bookmark89)  **Part I:**[Sample FisherExact Test,](#_bookmark89) [Performing the Fisher Exact TestUsingSPSS,](#_bookmark90) [Practice Questions,](#_bookmark93) [Solutions toPracticeQuestions](#_bookmark94)**.** |
| Week 11 | **Part I:**[The Runs TestforRandomness,](#_bookmark95) [Sample Runs Test (SmallDataSamples),](#_bookmark96) [Performing the Runs TestUsingSPSS,](#_bookmark97)  **Part II:**[Sample Runs Test (LargeDataSamples),](#_bookmark98) [Sample Runs Test Referencing aCustomValue,](#_bookmark99) [Performing the Runs Test for a Custom Value Using SPSS,](#_bookmark100) [Practice Questions,](#_bookmark101) [Solutions to Practice Questions.](#_bookmark102) |
| Course Delivery: | There are one lecture per week. |
| Text Book | NONPARAMETRIC STATISTICS A Step-by-Step Approach SECOND EDITION  GREGORY W. CORDER DALE I. FOREMAN |

**Grading:**

**Quizzes- Home Works-Projects**  20 %

**Midterm in the Lab.** 30 %

**Final Exam-in the Lab.** 40 %

**Homework and exam policy**

Collaboration on homework assignments is encouraged. You may consult outside reference materials, other students, the instructor, or anyone else. There is one restriction: you must write, type, or otherwise record your answers yourself, alone, so that your homework reflects your understanding. No late homework or make-up exams without prior approval; penalties may apply.