King Fahd University of Petroleum and Minerals Dhahran, Saudi Arabia
Department of Mathematics
STAT-525: Nonparametric Methods

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Office Hours:

Course Objectives: To master the theory and application of some well-known nonparametric statistical methodologies.

Course Description: The binomial test. The quantile test. Tolerance limits. The sign test. The Wlicoxon signed ranked test. The Mann-Whitney tests. Contingency tables. The median test. Measures of dependence. The chi squared goodness-of-fit test. Cochran's test. Tests for equal variances. Measures of rank correlation. Linear regression methods. One- and two-ways analysis of variance. Using statistical packages to analyze real data sets

Course Leaning Outcomes (CLOs)
By completing this course, students should be able to:

1. Determine when to use a nonparametric approach for data analysis.
2. Learn many nonparametric techniques for analysis, testing, model fitting, and estimation.
3. Formulate, test and interpret various hypothesis tests for location, scale, and independence problems.
4. Compare, contrast, and describe several nonparametric hypothesis tests.
5. Present and communicate the findings of statistical analyses of nonparametric data both orally and in writing

Textbook: Nonparametric Statistical Inference, JD Gibbons, S Chakraborti, 6th Edition, Chapman and Hall/CRC 2020.

Reference Textbook: Applied Nonparametric Statistics by WW Daniel, 2nd Edition, Cengage Learning 2000.

Course Assessment

Activity	Weight
Class Participation (home works, quizzes, attendance, etc.)	15%
First Major Exam	25%
Second Major Exam	25%
Final Exam (Comprehensive)	35%

Academic Integrity: All KFUPM policies regarding **ethics** and **academic honesty** apply to this course.

Schedule

Chapter No.	Chapter Name	No. of Weeks
3	Tests of Randomness	2
4	Tests of Goodness of Fit	2

5	One-Sample and Paired-Sample Procedures	3
6	The General Two-Sample Problem	3
10	Tests of the Equality of k Independent Samples	2
11	Measures of Association for Bivariate Samples	3

General Notes:

- Students are required to carry **pens**, **binder** and a **calculator** with statistical functions to **EVERY lecture, and exam**.
- Students are also expected to take class notes and organize their learning material in a binder for easy retrieval to help them in study and review for class, exams, etc. It is to the student's advantage to keep a binder for storing class notes, homework, and other graded assignments. Students who are organized will find it easier to find important materials when studying for exams.
- To effectively learn statistics, students need to *solve problems* and *analyze data*. The selected assigned problems are specifically designed to prepare you for class quizzes, lab, majors and final exam. So, it is expected that you complete these problems *step-by-step* and with *comprehension*.
- ***Never round*** your intermediate results to problems when doing your calculations. This will cause you to lose calculation accuracy. Round only your final answers and you should not round less than 4 decimal places unless required otherwise.
- ***A formula sheet*** **and** ***statistical tables*** **will be given for you in every exam, so you only need to bring with you** ***pens***, ***pencils***, ***a sharpener***, ***an eraser***, **and a** ***calculator***.

Important Notes:

- Students will be required to carry a scientific calculator ***with statistical functions*** to ***every class, quiz, and exam***.
- We will explain the MINITAB commands in the class and the student free to do his homework any were he likes.
- In accordance with University rules, ***Nine (9) unexcused absences*** will automatically result in a grade of ***DN***. It is students' responsibility to provide valid written excuses on time before a ***DN*** report is issued.
- ***Attendance*** on time is ***very*** important.
- Mostly, attendance will be checked within the ***first five minutes*** of the class. Entering the class after that, is considered as one late, and ***every two lateness*** equals to one absence.
- All contacts or announcements between the instructor and the students are supposed to be held on Blackboard, so the student ***must*** check his Blackboard inbox ***at least once*** a day.

Cheating and Plagiarism

This course is composed of individual assignments. It is important that your individual assignment be completed with your own efforts instead of copying it from your fellow student. KFUPM instructors follow "zero tolerance" approach with regard to cheating and plagiarism. During examinations (quizzes, major exams, lab tests) cheating or any attempt of cheating by use of illegal activities, techniques and forms of fraud will result in a "grade of F" in the course along with reporting the incident to the higher university administration.

Missing an Exam:

Missing an Exam: In case a student misses an exam (Exam I, Exam II, or the Final Exam) for a legitimate reason (such as medical emergencies), he must bring an official excuse from Students Affairs. Otherwise, he will get zero in the missed exam."

R is the computational software for this course.