KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS
Summer Innovative Teaching Program *(*Summer 2020 Term 193)

STAT211: BUSINESS STATISTICS I

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Instructor: Prof. Muhammad Riaz

Office: B 5, R 332 **Phone:** 7622 **Email**: riazm@kfupm.edu.sa

Office Hours: 3:30 - 4:30 pm (SMW)

Check Blackboard regularly for announcements

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Course Objectives:
The course will prepare the students to deal with various useful statistical methods mainly including descriptive statistics, probability theory, discrete and continuous probability distributions, sampling and sampling distributions, Estimation of parameters and confidence intervals, and ultimately making the meaningful decisions about a problem at hand.

Learning Approach:
The course will use **Applications Based Learning (ABL)** approach**.**
Some of its prime features are listed below:
The contents will be delivered using a more appealing **DATA DRIVEN** approach, where data will drive us to deal with a given problem at hand (instead of a preset theoretical model) which is need of this new digital era. MINITAB will be used as an analysis tool to deal with real datasets. The usage of computer will be more extensive to explore the depths of the data and its relevant concepts, being data driven. Each student or a group of some students will work with different data (may be of their own choice), that he (or they) will choose in the beginning of the semester (e.g. for a specific company they will compose and organize the data for various business variables of interest for the company).

Course Catalog Description

STAT 211 Statistics for Business I (3-0-3)

Data description: Frequency table, histogram, measures of central tendency, scatter diagram and correlation. Probability theory; sampling; probability distributions; point and confidence interval estimation; application for managerial decision. A statistical package will be used.

Note: Not open for credit to Statistics or Mathematics Majors. Not to be taken for credit with ISE 205, STAT 201 and STAT 319.

Prerequisite: MATH 105, MATH 106

Textbook and Software:

- Basic Business Statistics: Concepts and Applications, 12th edition, by Berenson, M.L., Levine, D.M., and Krehbiel, T.C., Pearson-Prentice Hall (2011).
- MINITAB

Course Resources:

- Some useful courses resources will be provided through Google Drive link

Learning Outcomes:

Upon completion of this course, students should be equipped with the following skills:

- Understanding the fundamental terminology including sample vs. population, statistic vs. parameter. descriptive vs. inferential.
- Recognizing business data and classify it into appropriate type (continuous and discrete) and different measurement levels.
- Calculating descriptive statistics and interpret the descriptive measures for particular real-life business problems.
- Graphing a correct display for data, and interpret the graphical displays for a particular real-life business problems.
- Assessing the correct probability for a particular business application and calculate it for different types of regular business events (marginal, conditional, and joint events)
- Distinguishing between *continuous* and *discrete* probability distributions and computing their properties in terms of mean, variance, standard deviation and CDF.
- Distinguishing between *distribution for sample data, distribution for population data, and distribution for sample statistics.*
- Understanding the role of *central limit theorem* in the distribution of sample statistics.
- Estimation of *parameters* and constructing confidence intervals for population mean and proportion.
- Using MINITAB software for business data.

Assessment and Grading Methods

Activity	Material	Schedule	Weight
First Exam	Chapters 1-4	Week 3	10%
Second Exam	Chapters 5-7	Week 6	10%
Final Exam	Comprehensive	Week 8	15 %
Term Project	❖ A real dataset for some company ❖ The Analysis tools of MINITAB ❖ Project reports (*project details may be seen under Group Projects Heading*)	Week 8	Total: 35 % [Progress report 1: 10% Progress report 2: 10% Final report: 15%]
Class Activities	Home works	Weekly	5%
	Tests/ Quizzes	Weekly	10%
	Class participation	Daily	5%
	Total		20%
Oral Assessment	Comprehensive	Week 7-8	10%

Grade Assignment

Score	87 – 100	80 – 86	75 – 79	70 – 74	65 – 69	60 – 64	55 – 59	50 – 54	< 50
Grade	A+	A	B+	B	C+	C	D+	D	F

Group Project

In the project, you need to analyze a real data of a company. You may access data from online sources, depending on your interest/ major area (e.g. Business informatics, marketing, HRM, & finance.).

Requirements:

- Each group should contain at most 3 students.
- Each group should submit the following formal reports, following the specified time deadlines for each (email submission).
- *Preliminary proposal*: Each group should submit a one-page proposal of their project for approval. The proposal should include a brief description of the problem and your data, and tasks that you intend to complete. This will be due in week 2.
- *Progress Report 1*: It should include a basic description of the data and its corresponding tabulations and graphical displays, along with descriptive Statistics. This will be due in week 4.
- *Progress Report 2*: It should include primary analysis and some fundamental models of the data. This will be due in week 6.
- *Final Report*: It should be a comprehensive document including the following:
- a brief background statement covering why you chose to study a specific company and other relevant information;
- the levels of the variables you studied; the responses and how they were measured;
- the data collected; Tabular and graphical summaries;
- a detailed statistical analysis and interpretations with reference to the real problem;
- a comparison between what you found and what you expected to find.

Course Syllabus

Week	Sections	Topics
Week 1	1.1-1.6 & 2.1-2.5	What is Business Statistics, tools for data collection, populations, samples, data Types and measurement levels, type of variables. Business statistics and computer. Tables, charts for categorical data. Organizing numerical data. Tables, charts for numerical data. Cross tabulations. Scatter plots and time series plots
Week 2	3.1-3.3 & 3.4-3.6	Measures of location and measures of variation. Coefficient of variation, empirical rule, Tchebysheff's inequality and standardized data values. Quartiles and the Box plot
Week 3	4.1-4.3 & 5.1-5.4	Basic probability concepts. Rules of probability, conditional probability, Bayes theorem. Probability distribution for discrete random variable, the Binomial distribution. Other discrete distributions (Poisson & Hypergeometric)
Week 4	5.4-5.5 & 6.1-6.4	Other discrete distributions (Poisson & Hypergeometric). Continuous random variables. The normal distribution. Other continuous distributions (Exponential & Uniform)
Week 5	6.4-6.7 & 7.1-7.5	Other continuous distributions (Exponential & Uniform). The normal approximation to the binomial. Sampling methods and sampling error. Sampling distributions of the mean and Sampling distributions of the proportion.
Week 6	8.1-8.4	Point and confidence interval estimation of the mean and proportion. Sample size determination for estimating the population mean and proportion
Week 7	10.1-10.3	Estimation of the difference between two population means. Estimation of the difference between two population proportions.
Week 8	Part of 10.3 & Review	Estimation of the difference between two population proportions