KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS
DHAHRAN, SAUDI ARABIA
STAT214: STATISTICAL METHODS for ACTUARIES (191)

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Textbook and Package:
1. Basic Business Statistics: Concepts and Applications, 12th edition, by Berenson, M.L., Levine, D.M., and Krehbiel, T.C., Pearson-Prentice Hall (2009).
2. **MINITAB** (http://www.minitab.com/products/minitab/student/)
3. **Scientific calculator with statistical functions**

Office Hours: MTR 11:00 am - 11:50 am & W 10:00 am – 11:50 am

Course Objectives:
Introduce basic concepts of statistics methods to actuary students. Emphasize the understanding of the nature of randomness of real world problems, the formulation and analysis of real world problems using well known statistical methods to make meaningful decisions.

Learning Outcomes: By completing this course, students should acquire/learn
- A thorough understanding of descriptive statistics, both graphical and numerical
- A working knowledge of sample spaces, events, and operations on events
- Elementary probability concepts
- A good understanding of random variables and their means and variances
- Basic discrete and continuous random variables
- The concept of a sampling distribution, and the central limit theorem
- Point and interval estimation of means and proportions
- Basic concepts of hypothesis testing including the hypothesis testing setup, procedure, p-values
- Correlation
- Simple and multiple linear regression, including estimation and testing of model parameters
- Time series analysis

Assessment
Assessment for this course will be based on quizzes, attendance, homework, lab, three major exams and a comprehensive final exam, as in the following:

Activity	Weight
Quizzes[1], attendance, homework	10%
Lab	10%
Exam 1: (Chapters 2, 3 & 4) Date: Sept. 25, 2019	10%
Exam 2: (Chapters 5, 6 & 7) Date: Oct. 23, 2019	20%
Exam 3: (Chapters 8, 9,10 & 12) Date: Nov. 20, 2019	20%
Final Exam (Comprehensive)	30%

Grade Assignment

Score	87 – 100	80 – 86.9	75 – 79.9	70 – 74.9	65 – 69.9	60 – 64.9	55 – 59.9	50 – 54.9	0 – 49.9
Grade	A+	A	B+	B	C+	C	D+	D	F

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

General Notes:
- There is a lot of material to be covered in this course, therefore we will use at least one hour of each lab session for lecturing.
- Bring your book to every class
- To successfully 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.

- ***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:

✓ In accordance with University rules, ***9 unexcused absences*** will result in a grade of ***DN***.
✓ ***Attendance*** on time is ***very*** important. Therefore, ½ % will be deduced for ***each lateness.*** That is, **2 lateness equals to one absence.**
✓ 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 times late*** equals to one absence.
✓ The use of mobile phones in class is strictly prohibited, and any student using his mobile will be asked to leave the class and will be marked absent without an excuse.

Home Work Problems:

➢ Handout problems will be posted on the WebCT or in the instructor home page towards the end of each chapter.
➢ We will explain the MINITAB commands in the class and the student free to do his homework anywhere he likes.
➢ The ***Homework*** should be submitted in the first Sunday after completing the chapter ***and no need for an announcement in advance***.
➢ No late homework will be accepted.

Syllabus (Tentative)

Week	Sections	Topics	Suggested questions
Week 1 **1-5 September**	2.1-2.5	Presenting data in tables and charts	2.5, 2.11, 2.20, 2.22, 2.24, 2.27, 2.37, 2.39, 2.44, 2.46
Week 2 **8 – 12 September**	3.1-3.3	Numerical descriptive measures	3.3, 3.4, 3.8, 3.13, 3.23, 3.28 3.33, 3.39, 3.40, 3.63
Week 3 **15 – 19 September**	3.4-3.6	Cont. numerical descriptive measures	
Week 4 **22 – 26 September**	4.1-4.2 5.1	Basic probability The probability distribution for a discrete random variables	4.3, 4.8, 4.14, 4.17, 4.19, 4.23, 4.31, 4.37, 4.61
Week 5 **29 sept – 3 October**	5.3.-5.5 6.1-6.2	The Binomial, Poisson and hyper geometric distributions The normal distribution	5.1, 5.3, 5.19, 5.23, 5.24, 5.30, 5.33, 5.42, 5.43
Week 6 **6 – 10 October**	6.3-6.6	Other distributions	6.1, 6.5, 6.6, 6.9, 6.23, 6.29, 6.33, 6.51
Week 7 **13 – 17 October**	7.3-7.5	Sampling distribution	7.18, 7.19, 7.20, 7.21, 7.25, 7.27, 7.45
Week 8 **20 -24 October**	8.1-8.4	Confidence interval estimation	8.1, 8.5, 8.9, 8.11, 8.12, 8.17, 8.23, 8.26, 8.30, 8.32, 8.38, 8.43, 8.48, 8.68
Week 9 **27 – 31 October**	9.1-9.4	One sample hypothesis testing	9.4,9.13,9.21,9.28,9.45,9.50,9.54,9.56 ,9.76
Week 10 **3 – 7 November**	10.1-10.4	Two- sample hypothesis testing	10.6, 10.10, 10.12, 10.18, 10.21, 10.27, 10.35, 10.44, 10.46, 10.50
Week 11 **10 – 14 November**	12.1-12.3	F test for difference between two variances Chi-Square tests	12.4, 12.9, 12.13, 12.21, 12.26, 12.27, 12.32, 12.39, 12.45
Week 12 **17 – 21 November**	13.1-13.8	Simple linear regression	13.3, 13.9, 13.15, 13.21, 13.24, 13.29, 13.33, 13.37, 13.41, 13.47, 13.55, 13.61
Week 13 **24 – 28 November**	14.1-14.5	Introduction to multiple regression	14.1, 14.4, 14.9, 14.14, 14.18, 14.23, 14.26, 14.31, 14.34, 14.38, 14.41, 14.44
Week 14 **1 – 5 December**	15.1- 15.4	Multiple Regression Model Building	
Week 15 **8 – 12 December**	16.1-16.8	Time-series and index numbers	
Week 16 **15 December**		Normal Monday class	