

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS

STAT 214: STATISTICAL METHODS for ACTUARIES

Fall 2020 (201)

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Office Hours: UTR 5pm-6pm

Check Blackboard regularly for announcements

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.

STAT 214 is an introduction to all other statistics courses required in your degree plan, namely 301, 302, 310, 416, and 460.

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 (2012).
2. MINITAB (<http://www.minitab.com/products/minitab/student/>)
<resources.stkfupm.com/?dir=uploads/STAT/STAT319/Lab%20Assignments>

Assessment

<u>Activity</u>	<u>Material</u>	<u>Schedule</u>	<u>Weight</u>
<u>Online Assessment 1</u>	<u>Chapters 1-5</u>	<u>Week 5</u>	<u>15%</u>
<u>Midterm</u>	<u>Chapters 1-9</u>	<u>Week 9</u>	<u>15%</u>
<u>Final Exam</u>	<u>Comprehensive</u>	<u>Week 15</u>	<u>25 %</u>
<u>Term Project</u>	<ul style="list-style-type: none"> ❖ <u>A real dataset for some actuarial company</u> ❖ <u>The Analysis tools of MINITAB</u> ❖ <u>Project reports (project details may be seen under Projects Heading)</u> 	<u>Week 15</u>	<u>Total: 15 %</u> <u>[Progress report 1: 5%</u> <u>Progress report 2: 5%</u> <u>Final report: 5%]</u>
<u>Class Activities</u>	<u>Home works</u>	<u>Weekly</u>	<u>5%</u>
	<u>Tests/ Quizzes</u>	<u>Weekly</u>	<u>10%</u>
	<u>Class participation</u>	<u>Daily</u>	<u>5%</u>
	<u>Total</u>		<u>20%</u>
<u>Oral Assessment</u>	<u>Comprehensive</u>	<u>Week 15</u>	<u>10%</u>

Course Grade Assignment

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

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.
- 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 answer to 2 or 3 decimals.

Notes Regarding Attendance

- ✓ Students are expected to be in class ON TIME.
- ✓ No student will be allowed to enter the class after the scheduled time.
- ✓ Any unexcused absence carries a penalty of 1 percentage point
- ✓ In accordance with University rules, **9 unexcused absences** will result in a grade of **DN**. See Article 9 page 15 of “the Undergraduate Study and Examinations Regulations and the KFUPM Rules for their Implementation” <http://registrar.kfupm.edu.sa/docs/pdf/AcademicRegulations.pdf>
- ✓ Only University issued excuses for absences will be accepted.
- ✓ 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.

Project:

The project should be based on a real data set (with complete description about variables) and a detailed statistical analysis using MINITAB. There should be some concluding remarks that refer to the real implications of your chosen problem.

Syllabus – A weekly guideline

Week	Sections	Topics	Homework
Week 1	1.1 – 1.4 2.1 - 2.6	Presenting data in tables and charts	1.1, 1.5, 1.7, 1.11, 1.25, 1.27 2.5, 2.11, 2.20, 2.22, 2.24, 2.27, 2.37, 2.39, 2.44, 2.46
Week 2	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	3.4-3.6	Numerical descriptive measures	
Week 4	4.1- 4.3 5.1	Basic probability The probability distribution for a discrete random variable	4.3, 4.8, 4.14, 4.17, 4.19, 4.23, 4.31, 4.37, 4.61
Week 5	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	6.4 - 6.6	Other distributions	6.1, 6.5, 6.6, 6.9, 6.23, 6.29, 6.33, 6.51
Week 7	7.3-7.5	Sampling distributions	7.18, 7.19, 7.20, 7.21, 7.25, 7.27, 7.45
Week 8	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	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	10.1-10.3	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	10.4 12.1-12.3 12.5	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	13.1-13.4	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	13.7-13.8 14.1-14.2	Simple linear regression 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	14.4-14.5 16.1-16.3	Introduction to multiple regression Time-series Forecasting	
Week 15	16.4,16.8	Time-series Forecasting Cont'd	