

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

STAT213: STATISTICAL METHODS for ACTUARIES

Fall 2017 (171)



Instructor: Walid S. Al-Sabah

Office: 5-330 **Phone:** 4197 **Email:** walid@kfupm.edu.sa

Office Hours: Sunday and Tuesday 10:00 am – 10:55 am
Wednesday 10:30 – 11:55 am

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 213 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 (2009).
2. **MINITAB** (<http://www.minitab.com/products/minitab/student/>)

Assessment

Activity	Weight
Homework and Quizzes	15%
Lab Test	5%
Exam 1: 5:30 pm Monday October 23, 2017 in 59-1001 Material covered up to the end of class on Sunday October 22.	20%
Exam 2: 5:30 pm Wednesday November 29, 2017 in 59-1001 Material covered up to the end of class on Tuesday November 28	20%
Final Exam (Comprehensive) 8:00 am Sunday December 31, 2017	40%

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 answer to 2 or 3 decimals.
- **A formula sheet** and **statistical tables** will be provided every exam, so you only need to bring with you **pens**, **pencils**, **a sharpener**, **an eraser**, **a ruler**, and a **calculator**.

Notes Regarding Attendance

- ✓ Students are expected to be in class no later than 9:00 am.
- ✓ 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.

Syllabus – A rough weekly guideline

<i>Week</i>	<i>Sections</i>	<i>Topics</i>	<i>Homework</i>
Week 1 Sep 17 – Sep 21	1.1 – 1.4 2.1 - 2.5	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 Sep 26 – Sep 29	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 Oct 1 – Oct 7	3.4-3.6	Numerical descriptive measures	
Week 4 Oct 8 – Oct 12	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 Oct 15 – Oct 19	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 Oct 22 – Oct 26	6.3-6.6 7.1-7.2	Other distributions Type of sampling methods	6.1, 6.5, 6.6, 6.9, 6.23, 6.29, 6.33, 6.51
Week 7 Oct 29 – Nov 2	7.3-7.5	Sampling distributions	7.18, 7.19, 7.20, 7.21, 7.25, 7.27, 7.45
Week 8 Nov 5 – Nov 9	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 Nov 12 – Nov 16	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 Nov 19 – Nov 23	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 Nov 26– Nov 30	10.4 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 Dec 3 – Dec 7	13.1-13.5	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 Dec 10 – Dec 14	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 Dec 17 – Dec 21	14.3-14.5 16.1-16.3	Introduction to multiple regression Time-series and index numbers	
Week 15 Dec 24 – Dec 28	16.4-16.8	Time-series and index numbers	

Notes Regarding Homework

- Homework should be submitted in class on the first day after a chapter ends.
- No late homework will be accepted.
- Homework not submitted will get a score of zero.
- Homework problems solutions should be complete with justifications and reasons for all steps by referencing theorems, equations and discussion from your textbook.
- Copying from any source, human, print or electronic will result in a zero on the homework and will be reported to the department chairman for appropriate action in accordance with University rules. Article 38 page 27 of “the Undergraduate Study and Examinations Regulations and the KFUPM Rules for their Implementation”
<http://registrar.kfupm.edu.sa/docs/pdf/AcademicRegulations.pdf>

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