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

STAT211: BUSINESS STATISTICS I (Term 163)

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Office Hours: UMTW 11:00 – 11:50 am or by appointment

Check Blackboard regularly for announcements

Course Objectives:

Introduce basic concepts of probability and statistics to business students. Emphasize the understanding of the nature of randomness of real world problems, the formulation of statistical methods using intuitive arguments and thereby make meaningful decisions.

Learning Objectives: By completing this course, students should be able to

- ☑ **Distinguish** between a *sample* and a *population*
- ☑ **Distinguish** between a *statistic* and a *parameter*
- ☑ **Design** a business *data collection effort* by using the most appropriate data sampling strategy
- ☑ **Classify** business data into the most appropriate *type and measurement levels*
- ☑ **Distinguish** between *continuous* and *discrete* data
- ☑ **Calculate** *summary descriptive statistics* manually and by MINITAB
- ☑ **Interpret** the correct *meaning of summary statistics* for particular real-life business problems
- ☑ **Graph** a *correct graphical display* for the correct type of data manually and by MINITAB
- ☑ **Interpret** the *correct meaning of graphical display* for a particular real-life business problems
- ☑ **Choose** the *correct graphical display* for a particular business decision
- ☑ **Choose** the *correct summary statistics* for a particular business application
- ☑ **Assess** the correct probability for a particular business application manually and by MINITAB
- ☑ **Calculate** the probability for different types of regular business events (marginal, conditional, and joint events) and for updated posterior business events
- ☑ **Calculate** expected values of future business events
- ☑ **Recognize and use** the correct probability distribution model for a particular business application manually and by MINITAB
- ☑ **Distinguish** between *continuous* and *discrete* probability distribution models
- ☑ **Distinguish** between *distribution for sample data, distribution for population data, and distribution for sample statistics*
- ☑ **Understand** the role of *central limit theorem* in the distribution of sample statistics
- ☑ **Evaluate** the *correctness and error levels* of a procedure for estimating a population parameter
- ☑ **Design** a business data collection effort by finding the *minimum necessary sample sizes* manually and by MINITAB
- ☑ ***Estimate*** *parameters* of a business population of interest manually and by MINITAB
- ☑ **Choose** the most *appropriate statistical procedure* for a particular type and measurement level of business data

Textbook, package and calculator:

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/)
3. Students must have their own calculators. Use of mobile phones or other devices are prohibited.

Assessment

Activity	Weight
Home Work, Attendance (5%+3%)	8%
Lab Work	7%
First Major Exam (Chapters 1,2,3,4) *Week 3 Tuesday, Jul. 25th (19:00 – 21:00)*	25%
Second Major Exam (Chapter 5,6,7) *Week 5 Wednesday, Aug. 9th (19:00 - 21:00)*	25%
Final Exam (Comprehensive)	35%
TOTAL	100%

Grade Assignment

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

- **Academic Integrity**: All KFUPM policies regarding **ethics** and **academic honesty** apply to this course.
- ***Important Notes:***
  - Excessive unexcused absences will result in a grade of ***DN*** in accordance with University rules.
  - ***Attendance*** on time is ***very*** important.
  - *A formula sheet* and *statistical tables* will be provided for you in every exam.
- **Home Work Problems:**

To successfully learn statistics, students need to solve problems and analyze data. The selected assigned problems are specifically designed to help you understand the material.

Chapter 1: 1.1, 1.5, 1.7, 1.11, 1.25, 1.27

Chapter 2: 2.5, 2.11, 2.20, 2.22, 2.24, 2.27, 2.37, 2.39, 2.44, 2.46

Chapter 3: 3.3, 3.4, 3.8, 3.13, 3.23, 3.28 3.33, 3.39, 3.40, 3.63

Chapter 4: 4.3, 4.8, 4.14, 4.17, 4.19, 4.23, 4.31, 4.37, 4.61

Chapter 5: 5.1, 5.3, 5.19, 5.23, 5.24, 5.30, 5.33, 5.42, 5.43

Chapter 6: 6.1, 6.5, 6.6, 6.9, 6.23, 6.29, 6.33, 6.51

Chapter 7: 7.18, 7.19, 7.20, 7.21, 7.25, 7.27, 7.45

Chapter 8: 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 Chapter 10: 10.12 (c), 10.14 (d), 10.20 (d), 1023 (d)), 10.29 (c & d)

week	Sections	Topics
1 July 9 – July 13	1.1 1.2 1.3 1.4 2.2 2.3 2.4 2.5 2.6	Why Learn Statistics. Statistics in Business. Basic Vocabulary of Statistics. Identifying Types of Variables. Organizing Categorical Data. Organizing Numerical Data. Visualizing Categorical Data. Visualizing Numerical Data. Visualizing Two Numerical Data.
2 July 15 – July 20 Saturday July 15 (normal Monday)	3.1 3.2 3.3 3.4 4.1 4.2 4.3	Central Tendency. Variation and Shape. Exploring Numerical Data. Numerical Descriptive Measures for a Population Basic probability concepts Conditional Probability Bayes' Theorem
3 July 23 – July 27 Exam 1 July 25	5.1 5.3 5.4 5.5 6.1	Probability distribution for discrete random variable Binomial distribution. Poisson Distribution Hypergeometric Distribution Continuous Probability distributions.
4 July 30 – Aug. 3	6.2 6.4 6.5 6.6 7.1	Normal distribution. Uniform Distribution. Exponential Distribution Normal Approximation to the Binomial. Types of Sampling Methods
5 Aug. 6 – Aug. 10 Exam 2 Aug. 9	7.3 7.4 7.5 8.1 8.2 8.3 8.4	Sampling Distributions. Sampling Distribution of the Mean Sampling Distribution of the Proportion. Confidence interval Estimate of the Mean (σ known) Confidence interval Estimate of the Mean (σ unknown) Confidence interval Estimate for the Proportion Determining Sample Size.
6 Aug.13 – Aug.17	10.1 10.2 10.3	C.I. Estimate for the Difference Between Two means C.I. Estimate for the Mean Difference. C.I. Estimate for the Difference Between Two Proportions
7 Aug.20 – Aug.24		Review + LAB TEST