KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPT OF MATHEMATICAL SCIENCES, DHAHRAN, SAUDI ARABIA

STAT319: PROBABILITY & STATISTICS FOR ENGINEERS & SCIENTISTS
Course Syllabus, Summer 2007 (Term 063)

Instructor: Marwan Al-Momani, **Office:** 4: 104-6. **Phone:** 860 1734
Email: almomani@kfupm.edu.sa
Home Page: http://faculty.kfupm.edu.sa/math/almomani
Office Hours: 12: 00pm -1:10pm, SUMT or by appointment except the prayer time.

Text: Probability & Statistics for Engineers and Scientists by Walpole et al. (2002) 7th Ed.
Software Package: The Student Edition of ***STATISTICA*** with a Lab Manual.

Course Objectives: Introducing the basic concepts of probability and statistics to engineering students. Emphasis will be given on the understanding of the nature of randomness of real world phenomena, the formulation of statistical methods by using intuitive arguments and thereby making meaningful decisions.

Assessment: Assessment for this course will be based on homework, class work, 4 major exams, a final exam and lab works, as in the following:

Activity	**Weight**
Home Works and class work and quizzes	15%
Lab Works	15%
First Major Exam : **Sat July 21. location:** OAB Auditorium Time : 6.00pm – 8.00pm	17%
Second Major Exam : **Sat Aug 4. location:** OAB Auditorium Time : 8.00pm – 10.00pm	18%
Final Exam Comprehensive	35%

Students are required to carry a Scientific calculator with **stat functions** to every lecture, lab and in the exam.
Home Work:
2.2 (pp. 29-31): 4,8,15; **2.4-2.5 (pp.46-47)**: 1,3,8,15,17; **2.6-2.7(pp. 54-56**): 3,5,8,16,17; **2.8 (60-61)**: 2, 8
3.1-3.3 (pp. 72-74): 5, 7, 9, 13
4.1 (pp. 94-95): 5,13,14,17**; 4.2-4.3 (pp.112**): 3, 5, 6
5.3 (pp. 124-126): 5,9,16,27,28; **5.4 (pp. 131-132)**: 4, 8, 20; **5.5-5.6 (pp. 139-140**): 7,8,19,21
6.1-6.4 (pp. 156-158): 9,13,15, 17; **6.5 (pp. 164-165):** 4,13; **6.6 – 6.8 (pp. 174-175**): 7,8,15
8.5(pp. 215-216): 3,7,9
9.4-9.6 (pp. 245-246): 4, 8, 13; **9.8 (pp. 255-256):** 4,6,8; **9.10-9.11 (pp. 262-264**): 3, 10, 16; **9.12 (pp. 68)**: 1
10.3-10.4: (**pp. 298-299**): 15; **10.5-10.7**: (**pp. 319-323**): 1, 2, 7; **10.11** (**pp.328**): 7, 9
11.12 (pp. 396): 4**; 11.3 (pp. 358-360)**: 1, 3, 4, 7; **11.4-11.6 (pp. 371-372):** 3, 5, 6, 11

Week	Topic
(1)	**Ch. 1. Descriptive Statistics:** 1.1 – 1.8
	Overview: population and sample
	Graphical Methods and Data Description: stem and leaf, and histogram
	Measures of Location: mean median, mode and Percentiles
	Measures of Variability: variance, standard deviation
(2)	Box plot, Empirical Rule, z-scores, C.V. and C.S.
	Ch 2. Probability: 2.1 – 2.8
	Sample Space, Events, Probability of an Event, Additive Rules
	Conditional Probability, Multiplicative Rules
	Bayes' Rule and Independence
(3)	**Ch 3. Random Variables and Probability Distributions**: 3.1- 3.3
	Concept of a Random Variable , Discrete Probability Distributions
	Continuous Probability Distributions
	Ch 4. Mathematical Expectation: 4.1 – 4.3
	Mean and variance of a Single Random Variable
	Means of linear Combinations
	Ch 5. Discrete Probability Distributions: 5.1- 5.6
(4)	Binomial, Hypergeometric, Geometric and Poisson Distributions
	Ch 6. Continuous Probability Distributions: 6.1 – 6.10
	Continuous Uniform and Normal Distributions
	Areas under the Normal Curve and Applications of the Normal Distribution
	Normal Approximation to the Binomial Distribution
	Exponential Distribution and other Distributions
(5)	**Ch 8. Sampling Distributions:** 8.1-8.7
	Random Sampling and Some Important Statistics Sampling Distributions and Sampling Distribution of Means
	Sampling Distribution of Sample Variance and *t*-Distribution
	Ch 9. Estimation Problems: 9.1-9.5; 9.8-9.12
	Estimating the Mean and Standard Error of a Point Estimate and confidence interval for single mean
(6)	Two Sample Pooled T-Interval
	Estimating a Proportion and Estimating the Difference Between Two Proportions
	Ch 10. Tests of Hypothesis: 10.1 – 10.9 and 10.11
	Statistical Hypotheses, Testing a Statistical Hypothesis and One and Two Tailed Tests
	The Use of p-Values for Decision Making
(7)	Tests Concerning a Single Mean
	Relationship to Confidence and testing hypothesis
	Tests on a Single Mean (Variance Unknown) and Test on a Single Proportion
	Ch 11. Simple Linear Regression: 11.1- 11.6 and 11.12
(8)	The Simple Linear Regression Model, Least Squares and the Fitted Model
	Properties of the Least Squares Estimators, Correlation
	Inferences Concerning the Regression Coefficients and prediction.