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

STAT319: PROBABILITY & STATISTICS FOR ENGINEERS & SCIENTISTS
Course Syllabus, Fall 2005 (Term 051)

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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 the Class Participation (attendance, asking questions and comments), home works, take home tests, class tests, two major exams, a 'comprehensive' final exam and lab works, as in the following:

Activity	**Weight**
CP (3%), home works (1+1+1)%, take home tests (1+1+1)%, class tests (2+2+2)%	15%
Major Exam # I (Chapters 1- 4) (Sunday, 23.10.05, Bldg 10, 0900- 1030 pm)	15%
Major Exam # II (Chapters 5, 6 and 8) (Tuesday, 29.11.05, Bldg 10, 0700-0830 pm)	15%
Lab Works	15%
Final Exam ('Comprehensive')	40%

Students are required to carry a Scientific calculator with **stat functions** to every lecture, lab and in the exam. Students are also required to keep the prescribed **Formula Sheet** with them. Usually once a chapter is finished, you expect a class test

Day/Date	**Topic**	**# Lectures; Home Works**
	Ch 1. Descriptive Statistics	
SAT 10.09.05 (1)	1.1 Overview	An instructor can depend on the lab manual or other material for clarity of some concepts. **(20.09.05: Dropping Without PR)** **Handout Problems**
	1.4 Measures of Location (Include Percentiles)	
	1.5 Measures of Variability	
SAT 17.09.05 (2)	Empirical Rule, z-scores, C.V. and C.S.	
	1.8 Graphical Methods and Data Description	
	Mean, Variance and Percentiles of Grouped Data	
SAT 24.09.05 (3)	**National Holiday**	
	Ch 2. Probability	**2.2 (29-31)**: 4,8,15; **2.4-2.5 (46-47)**: 1,3,8,15,17 ; **2.6-2.7(54-56)**: 3,5,8,16,17; **2.8 (60-61)**: 2, 8
	2.1 Sample Space, 2.2 Events	
	2.4 Probability of an Event	
SAT 01.10.05 (4)	2.5 Additive Rules	
	2.6 Conditional Probability	
	2.7 Multiplicative Rules	
SAT 08.10.05 (5)	2.8 Bayes' Rule	
	Ch 3. Random Variables and Probability Distributions	
	3.1 Concept of a Random Variable , 3.2 Discrete Probability Distributions	**3.1-3.3 (72-74)**: 5, 7, 9, 13
	3.3 Continuous Probability Distributions	

	Ch 4. Mathematical Expectation	
SAT 15.10.05 (6)	4.1 Mean of a Single Random Variable (including up to Example 4.5)	**4.1 (94-95):** 5,13,14,17
	4.2 Variance (including up to Example 4.12),	**4.2-4.3 (112**): 3, 5, 6
	4.3 Means of linear Combinations (including up to Example 4.18)	**18.10.05: Midterm Grade Report due**
	Ch 5. Discrete Probability Distributions	
SAT 22.10.05 (7)	5.3 Binomial Distribution 5.4 Hypergeometric Distribution	**5.3 (124-126)**: 5,9,16,27,28 **5.4 (131-132)**: 4, 8, 20
	5.5 Geometric Distribution	**5.5-5.6 (139-140**): 7,8,19,21
	5.6 Poisson Distribution	*Major Exam # 1 (Ch 1-4*) (Sunday, 23.10.05, Bldg 10, 0900-1030 pm)*
	Ch 6. Continuous Probability Distributions	
SAT 12.11.05 (8)	6.1 Continuous Uniform Distribution, 6.2 Normal Distribution	**6.1-6.4 (156-158)**: 9,13,15, 17; **6.5 (164-165):** 4,13
	6.3 Areas under the Normal Curve 6.4 Applications of the Normal Distribution	**6.6 - 6.8 (174-175**): 7,8,15, Rev #2
	6.5 Normal Approximation to the Binomial Distribution	
	6.6 Exponential Distributions, 6.7 Application of Exponential Distribution 6.8 Chi-squared Distribution	
	Sampling Distributions	
SAT 19.11.05 (9)	8.1 Random Sampling 8.2 Some Important Statistics 8.4 Sampling Distributions	**8.5(215-216)**: 3,7,9
	8.5 Sampling Distribution of Means	
	8.6 Sampling Distribution of Sample Variance 8.7 *t*-Distribution	
	Estimation Problems	
SAT 26.11.05 (10)	9.1-9.3, 9.4 Estimating the Mean 9.5 Standard Error of a Point Estimate	*Major Exam # II (Ch 5, 6 and 8) (Tuesday, 29.11.05, Bldg 10, 0730-0900 pm)* **9.4-9.6 (245-246)**: 4, 8, 13; **9.8 (255-256):** 4,6,8; **9.10-9.11 (262-264**): 3, 10, 16; **9.12 (268)**: 1 *(30.11.05: Dropping with W)*
	9.8 Two Sample Pooled T-Interval	
	9.10 Estimating a Proportion, 9.11 Estimating the Difference Between Two Proportions	
SAT 03.12.05 (11)	**Tests of Hypothesis**	
	10.1 Statistical Hypotheses, 10.2 Testing a Statistical Hypothesis	**10.3-10.4**: (298-299): 15; **10.5-10.7**: (319-323): 1, 2, 7; **10.8:** 10,15,18 **10.11** (328): 7, 9
SAT 10.12.05 (12)	10.3 One and Two Tailed Tests, 10.4 The Use of p-Values for Decision Making	
	10.5 Tests Concerning a Single Mean	
	Continue 10.5; 10.6 Relationship to Confidence IE	
SAT 17.12.05 (13)	10.7 Tests on a Single Mean (Variance Unknown)	
	10.8 Two Sample Pooled T-Test	
	10.11 Test on a Single Proportion	
	Simple Linear Regression	
SAT 24.12.05 (14)	11.2 The Simple Linear Regression Model, 11.3 Least Squares and the Fitted Model	**11.12 396):** 4 **11.3 (358-360)**: 1, 3, 4, 7 **11.4-11.6 (371-372):** 3, 5, 6, 11 (**28.12.05: Dropping with WP/WF)**
	11.12 Correlation	
	11.4 Properties of the Least Squares Estimators,	
SAT 31.12.05 (15)	11.5 Inferences Concerning the Regression Coefficients	
	11.6 Prediction	
04.01.06 (16)	**Review (last day of class before Id al-Adha)**	
21.01.06	**First Class after Id al-Adha (Also last Class !!!!!!)**	