

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

STAT319: PROBABILITY & STATISTICS FOR ENGINEERS & SCIENTISTS
Course Syllabus, Fall 2006 (Term 061)

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Office Hours: 1100- 1150 am and 0300* - 0400 (Sat, Mon and Wed) or by appointment

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 at 8 tests, a major exam, a final exam and lab works, as in the following:

Activity	Weight
<i>Home Works, Class Tests</i>	25%
<i>Lab Works</i>	15%
<i>Major Exam (Chapters 1 to 6) (Tuesday, Nov 21, 2006)</i>	30%
<i>Final Exam</i>	30%

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 09.09.06 (1)	1.1 Overview	An instructor can depend on the lab manual or other material for clarity of some concepts.
	1.4 Measures of Location	
	Percentiles	
THU 14.09.06	1.5 Measures of Variability	Handout Problems
SAT 16.09.06 (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 23.09.06 (3)		
	Ch 2. Probability	2.2 (29-31): 4, 8, 15;
	2.1 Sample Space, 2.2 Events	
	2.4 Probability of an Event	2.4-2.5 (46-47): 1, 3, 8, 15, 17 ;
SAT 30.09.06 (4)	2.5 Additive Rules	
	2.6 Conditional Probability	2.6-2.7(54-56): 3, 5, 8, 16, 17;
	2.7 Multiplicative Rules	
SAT 07.10.06 (5)	2.8 Bayes' Rule	2.8 (60-61): 2, 8
	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 <i>(Last Day of Classes before Eid al-Fitr)</i>
	3.3 Continuous Probability Distributions	
	Ch 4. Mathematical Expectation	
SAT 28.10.06 (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)	
	Ch 5. Discrete Probability Distributions	
SAT 04.11.06 (7)	5.3 Binomial Distribution	5.3 (124-126): 5,9,16,27,28
	5.4 Hypergeometric Distribution	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	
	Ch 6. Continuous Probability Distributions	
SAT 11.11.06 (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	6.6 - 6.8 (174-175): 7,8,15, Rev #2
	6.4 Applications of the Normal Distribution	
	6.5 Normal Approximation to the Binomial Distribution	
	6.6 Exponential Distributions, 6.7 Application of Exponential Distribution 6.8 Chi-squared Distribution	
	Ch 8. Sampling Distributions	
SAT 18.09.06 (9)	8.1 Random Sampling 8.2 Some Important Statistics	8.5(215-216): 3,7,9 <i>Major Exam # II (Ch 1 to 6) (Tuesday, 21.11.06, Bldg 54, 0630-0900 pm)</i>
	8.4 Sampling Distributions	
	8.5 Sampling Distribution of Means	
	8.6 Sampling Distribution of Sample Variance 8.7 <i>t</i> -Distribution	
	Ch 9. Estimation Problems	
SAT 25.11.06 (10)	9.1-9.3, 9.4 Estimating the Mean 9.5 Standard Error of a Point Estimate	9.4-9.6 (245-246): 4, 8, 13; 9.8 (255-256): 4,6,8;
	9.8 Two Sample Pooled T-Interval	9.10-9.11 (262-264): 3, 10, 16; 9.12 (268): 1
	9.10 Estimating a Proportion, 9.11 Estimating the Difference Between Two Proportions	
	Ch 10. Tests of Hypothesis	
SAT 02.12.06 (11)	10.1 Statistical Hypotheses, 10.2 Testing a Statistical Hypothesis, 10.3 One and Two Tailed Tests	10.3-10.4: (298-299): 15; 10.5-10.7: (319-323): 1, 2, 7;
SAT 09.12.06 (12)	10.4 The Use of p-Values for Decision Making	10.8: 10,15,18
	10.5 Tests Concerning a Single Mean	10.11 (328): 7, 9
	Continue 10.5; 10.6 Relationship to Confidence IE	
SAT 16.12.06 (13)	10.7 Tests on a Single Mean (Variance Unknown)	
	10.8 Two Sample Pooled T-Test	
	10.11 Test on a Single Proportion	
	Ch 11. Simple Linear Regression	
SAT 06.01.07 (14)	11.2 The Simple Linear Regression Model, 11.3 Least Squares and the Fitted Model	11.12 396): 4
	11.12 Correlation	11.3 (358-360): 1, 3, 4, 7
	11.4 Properties of the Least Squares Estimators,	11.4-11.6 (371-372): 3, 5, 6, 11
SAT 13.01.07 (15)	11.5 Inferences Concerning the Regression Coefficients	(10.01.07: Dropping with WP/WF) Final Exam : 7 pm, January 28, 2007
	11.6 Prediction	