

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

**STAT319: PROBABILITY & STATISTICS FOR ENGINEERS & SCIENTISTS**  
**Course Syllabus, Fall 2005 (Term 052)**

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Text : Probability & Statistics for Engineers and Scientists by Walpole et.al. (2002) 7<sup>th</sup> 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, class tests, two major exams, a 'comprehensive' final exam and lab works, as in the following:

Activity	Weight
<i>CP, home works, class tests</i>	15%
<i>Major Exam # I (Chapters 1- 4) (Wednesday, 22.03.2006, Bldg 10, 7.30- 9.00 pm)</i>	15%
<i>Major Exam # II (Chapters 5, 6 and 8) (Tuesday, 18.04.2006, Bldg 10, 07.30-9.00 pm)</i>	15%
<i>Lab Works</i>	15%
<i>Final Exam ('Comprehensive')</i>	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
	<b>Ch 1. Descriptive Statistics</b>	
SAT 11.02.06 (1)	1.1 Overview	An instructor can depend on the lab manual or other material for clarity of some concepts. (16.02.06: Normal Saturday Classes; 22.02.06: Dropping Without PR) <b>Handout Problems</b>
	1.4 Measures of Location (Include Percentiles)	
	1.5 Measures of Variability	
SAT 18.02.06 (2)	Empirical Rule, z-scores, C.V. and C.S.	<b>Handout Problems</b>
	1.8 Graphical Methods and Data Description	
	Mean, Variance and Percentiles of Grouped Data	
SAT 25.02.06 (3)	<b>Ch 2. Probability</b>	2.2 (29-31): 4,8,15;
	2.1 Sample Space, 2.2 Events	2.4-2.5 (46-47): 1,3,8,15,17 ;
	2.4 Probability of an Event	
SAT 04.03.06 (4)	2.5 Additive Rules	2.6-2.7(54-56): 3,5,8,16,17;
	2.6 Conditional Probability	
	2.7 Multiplicative Rules	2.8 (60-61): 2, 8
SAT 11.03.06 (5)	2.8 Bayes' Rule	
	<b>Ch 3. Random Variables and Probability Distributions</b>	
	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	
	<b>Ch 4. Mathematical Expectation</b>	

SAT 18.03.06 (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)	<b>Major Exam # 1 (Ch 1-4*) (Wednesday, 22.03.06, Bldg 10, 7.30-9.00 pm)</b>
	<b>Ch 5. Discrete Probability Distributions</b>	
SAT 25.03.06 (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	
	<b>Ch 6. Continuous Probability Distributions</b>	<b>01-02April 06: Midterm Break</b>
SAT 01.04.06 (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	
	6.4 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	
	<b>Sampling Distributions</b>	
SAT 08.04.06 (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	<b>Major Exam # II (Ch 5, 6 and 8) (Tuesday, 18.04.06, Bldg 10, 0730-0900 pm)</b>
	8.6 Sampling Distribution of Sample Variance 8.7 t-Distribution	
	<b>Estimation Problems</b>	
SAT 15.04.06 (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;
	9.10 Estimating a Proportion, 9.11 Estimating the Difference Between Two Proportions	
SAT 22.04.06 (11)	<b>Tests of Hypothesis</b>	
	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 29.04.06 (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 06.05.06 (13)	10.7 Tests on a Single Mean (Variance Unknown)	
	10.8 Two Sample test (Equal variance case only).	
	10.11 Test on a Single Proportion	
	<b>Simple Linear Regression</b>	
SAT 13.05.06 (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 20.05.06 (15)	11.5 Inferences Concerning the Regression Coefficients	(17.05.06: Dropping with WP/WF)
	11.6 Prediction	
27.05.06 (16)	Review	
28.05.06	Sunday :Last Day of Classes	

