

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

STAT319: PROBABILITY & STATISTICS FOR ENGINEERS & SCIENTISTS
 SUMMER 2009 (TERM 083)

Course: STAT319 Sections 1 and 4, SUMTW

Instructor: Anwar Joarder

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Office Hours: 1130 am to 0130 pm and by appointment.

Text : Probability & Statistics for Engineers and Scientists by Walpole et al. (2007) 8th ed.

Software Package: The Student Edition of *STATISTICA* with a Lab Manual.

Course Objectives: Introduce 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:

Activity	Weight
<i>Home Work, class work and Class Tests</i>	20%
<i>Lab Work</i>	15%
<i>Major Exam (Chapters 1 to 5) – TBA</i>	25%
<i>Final Exam (Comprehensive) 1-3 September</i>	40%

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

Syllabus

Week	Topic
Week 1 11/07-15/07	Ch 1. Descriptive Statistics 1.1 Overview 1.4 Measures of Location 1.5 Measures of Variability
	Percentiles, Empirical Rule, z-scores, C.V. and C.S. 1.8 Graphical Methods and Data Description Mean, Variance and Percentiles of Grouped Data
Week 2 18/7-22/7	Ch 2. Probability 2.1 -2.2 Sample Space and Events 2.4- 2.7 Probability of an Event, Probability Rules: Additive, Conditional and Multiplicative
	2.8 Bayes' Rule Ch 3. Random Variables and Probability Distributions 3.1-3.2 Concept of a Random Variable and Discrete Probability Distributions 3.3 Continuous Probability Distributions
Week 3 28/3-1/4	Ch 4. Mathematical Expectation 4.1- 4.2 Mean of a Single Random Variable and variance 4.3 Means of linear Combinations Ch 5. Discrete Probability Distributions 5.3 Binomial Distribution
Week 4 25/7-29/7	5.4- 5.6 Hypergeometric, Geometric and Poisson Distributions Ch 6. Continuous Probability Distributions 6.1 Continuous Uniform Distribution 6.2 Normal Distribution 6.3 Areas under the Normal Curve
	6.4 Applications of the Normal Distribution 6.5 Normal Approximation to the Binomial Distribution 6.6 Exponential and other Distributions
Week 5 1/8-5/8	Ch 8. Sampling Distributions 8.1-8.4 Random Sampling, Some Important Statistics and Sampling Distributions
	Midterm Vacation (Sat April 25 – Wed April 29)
	8.5- 8.7 Sampling Distribution of Means, Sampling Distribution of Sample Variance and t -Distribution
	Ch 9. Estimation Problems 9.1-9.5 Estimating the Mean ---- Standard Error of a Point Estimate 9.8 Two Sample Pooled T-Interval 9.10- 9.11 Estimating a Proportion and Estimating the Difference Between Two Proportions
Week 6 8/8-12/8	Ch 10. Tests of Hypothesis 10.1-10.2 Statistical Hypotheses, Testing a Statistical Hypothesis,
	10.3 One and Two Tailed Tests 10.4 The Use of p -values for Decision Making 10.5 Tests Concerning a Single Mean
Week 7 15/08-19/08	10.6 Relationship to Confidence Interval 10.7- 10.8 Tests on a Single Mean and Two Sample Pooled T-Test 10.11 Test on a Single Proportion
Week 8 22/08-26/08	Ch 11. Simple Linear Regression 11.1-11.4 The Simple Linear Regression Model, Least Squares and the Fitted Model, Properties of the Least Squares Estimators
29/08-31/08	11.5 – 11.6 Inferences Concerning the Regression Coefficients and Prediction 11.12 Correlation
	Final Exam 1-3 September

