

**KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPT OF MATHEMATICS & STATISTICS, DHAHRAN, SAUDI ARABIA**

**STAT319: PROBABILITY & STATISTICS FOR ENGINEERS & SCIENTISTS
Course Syllabus, Summer 2008 (Term 073)**

Instructor: Marwan Al-Momani

Office: B.4 104-6

Phone: 1734

Email: almomani@kfupm.edu.sa

Office Hours: **SUMT: 10:30am – 11:50am or by appointment**

Web Page: <http://faculty.kfupm.edu.sa/math/almomani>

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 tests (or quizzes), a major exam, a final exam and lab works, as in the following:

Activity	Weight
<i>Home Works, class work and Class Tests: Expect an end-of- chapter quiz</i>	20%
<i>Lab Works</i>	15%
<i>Major Exam (Chapters 1 to 6) Sat Aug 2 - bldg 10 4:00-6:30pm</i>	30%
<i>Final Exam (Chapters 8-11) Wed Aug 27 12:30pm</i>	35%

Note: Students are required to carry with them a scientific calculator with stat functions to every lecture, lab and the exam. Usually once a chapter is finished, student should expect a class test.

Homework will be handed out on WebCT ([check assignments & calendar on WebCT](#)).

But here are some suggested extra problems from your book.

Chapter 2 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	Chapter 8 8.5 (215-216): 3,7,9
Chapters 3 and 4 3.1-3.3 (72-74): 5, 7, 9, 13 4.1 (94-95): 5,13,14,17 4.2-4.3 (112): 3, 5, 6	Chapter 9 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
Chapter 5 5.3 (124-126): 5,9,16,27,28 5.4 (131-132): 4, 8, 20 5.5-5.6 (139-140): 7,8,19,21	Chapter 10 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
Chapter 6 6.1-6.4 (156-158): 9,13,15, 17; 6.5 (164-165): 4,13 6.6 – 6.8 (174-175): 7,8,15	Chapter 11 11.12 396): 4 11.3 (358-360): 1, 3, 4, 7 11.4-11.6 (371-372): 3, 5, 6, 11

Hand in homework for completed chapters to instructor [every Saturday class](#).

Tentative Syllabus

For important university dates, check also <http://regweb.kfupm.edu.sa/cal/cal073.htm>

		Topic	Section
01	July 5 – July 9	Descriptive Statistics: Overview, Frequency distribution, histogram, stem and leaf, mean, median and mode, percentiles, quartiles, IQR, box plot, range, variance, standard deviation and empirical rule, CV and CS.	An instructor can depend on the lab manual or other material for clarity of some concepts. 1.1, 1.4, 1.5, 1.8
02	July 12 – July 16	Probability: Sample Space, Events , Probability of an Event , Additive Rules , Conditional Probability , Multiplicative Rules, Bayes' Rule Random Variables and Probability Distributions : Concept of a Random Variable, Discrete Probability Distributions	2.1, 2.2, 2.4-8 3.1-3.2
03	July 19 – July 23	Continuous Probability Distributions Mathematical Expectation: Mean of a Single Random Variable (including up to Example 4.5), Variance (including up to Example 4.12), Means of linear Combinations (including up to Example 4.18) Discrete Probability Distributions : Binomial Distribution,	3.3 4.1-4.3 5.3
04	July 26 – July 30	Hypergeometric Distribution , Geometric Distribution , Poisson Distribution Continuous Probability Distributions: Continuous Uniform Distribution, Normal Distribution, Areas under the Normal Curve, Applications of the Normal Distribution, Normal Approximation to the Binomial Distribution, Exponential and other Distributions Sampling Distributions: Random Sampling, Some Important Statistics, Sampling Distributions,	5.4-5.6 6.1-6.6 8.1, 8.2
05	Aug 2 – Aug 6	Sampling Distribution of Means, Sampling Distribution of Sample Variance, t-Distribution Estimation Problems: Estimating the Mean, Standard Error of a Point Estimate, Two Sample Pooled T-Interval , Estimating a Proportion, Estimating the Difference Between Two Proportions Tests of Hypotheses: Statistical Hypotheses, Testing a Statistical Hypothesis,	8.4-8.7 <i>Midterm Exam (Sat Aug 2)</i> 9.1-9.3, 9.4-9.5, 9.8, 9.10-9.11 10.1-10.2
06	Aug 9 – Aug 13	One and Two Tailed Tests, The Use of p-Values for Decision Making, Tests Concerning a Single Mean, Relationship to Confidence Interval	10.3-10.8, 10.11
07	Aug 16 – Aug 20	Tests on a Single Mean (Variance Unknown), Two Sample test (Equal variance case only), Test on a Single Proportion Linear regression: The Simple Linear Regression Model, Correlation, Least Squares and the Fitted Model, Properties of the Least Squares Estimators, Inferences Concerning the Regression Coefficients	11.1-11.3, 11.12, 11.4-11.5
08	Aug 23 – Aug 25	Inferences Concerning the Regression Coefficients, Prediction	11.5-11.6
	Wed Aug 27	Final Exam	12:30pm