

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

**STAT319: PROBABILITY & STATISTICS FOR ENGINEERS & SCIENTISTS  
Course Syllabus, Fall 2007 (Term 071)**

**Instructor:** Marwan Al-Momani, **Office:** B4: 104-6, **Phone:** 860 1734

**Email:** almomani@kfupm.edu.sa

**Office Hours:** **S:** 10.00 to 11.50 am & 12:10 to 1:00pm. **U:** 9:00 to 10:50 am

**M:** 10:00 to 10:50 am or by appointment.

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

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

Activity	Weight
<i>Home Works, class work and Class Tests: There will be quiz at the end of each chapter</i>	20%
<i>Lab Works</i>	15%
<i>Major Exam (Chapters 1 to 6) Sunday 18/11/1007 at 5.30pm-8.00pm</i>	30%
<i>Final Exam (Chapters 8-11)</i>	35%

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
<b>Week 1</b> 8/9/2007	<b>Ch 1. Descriptive Statistics</b> 1.1 Overview 1.4 Measures of Location 1.5 Measures of Variability
<b>Week 2</b> 15/9	Percentiles, Empirical Rule, z-scores, C.V. and C.S. 1.8 Graphical Methods and Data Description Mean, Variance and Percentiles of Grouped Data
<b>Week 3</b> 22/9	<b>Ch 2. Probability</b> 2.1 -2.2 Sample Space and Events 2.4- 2.7 Probability of an Event, Additive Rules, Conditional Probability and Multiplicative Rules
<b>Week 4</b> 29/9	2.8 Bayes' Rule <b>Ch 3. Random Variables and Probability Distributions</b> 3.1-3.2 Concept of a Random Variable and Discrete Probability Distributions 3.3 Continuous Probability Distributions
<b>Week 5</b> 20/10	<b>Ch 4. Mathematical Expectation</b> 4.1- 4.2 Mean of a Single Random Variable and variance 4.3 Means of linear Combinations <b>Ch 5. Discrete Probability Distributions</b> 5.3 Binomial Distribution
<b>Week 6</b> 27/10	5.4- 5.6 Hypergeometric, Geometric and Poisson Distributions  <b>Ch 6. Continuous Probability Distributions</b> 6.1 Continuous Uniform Distribution 6.2 Normal Distribution
<b>Week 7</b> 3/11	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
<b>Week 8</b> 10/11	<b>Ch 8. Sampling Distributions</b> 8.1-8.4 Random Sampling, Some Important Statistics and Sampling Distributions 8.5- 8.7 Sampling Distribution of Means, Sampling Distribution of Sample Variance and <i>t</i> -Distribution
<b>Week 9</b> 17/11	<b>Ch 9. Estimation Problems</b> 9.1-9.5 Estimating the Mean Standard Error of a Point Estimate
<b>Week 10</b> 24/11	9.8 Two Sample Pooled T-Interval 9.10- 9.11 Estimating a Proportion and Estimating the Difference Between Two Proportions
<b>Week 11</b> 1/12	<b>Ch 10. Tests of Hypothesis</b> 10.1-10.3 Statistical Hypotheses, Testing a Statistical Hypothesis, One and Two Tailed Tests
<b>Week 12</b> 8/12	10.4 The Use of p-Values for Decision Making 10.5 Tests Concerning a Single Mean 10.6 Relationship to Confidence Interval
<b>Week 13</b> 29/12	10.7- 10.8 Tests on a Single Mean and Two Sample Pooled T-Test 10.11 Test on a Single Proportion
<b>Week 14</b> 4/1/2008	<b>Ch 11. Simple Linear Regression</b> 11.1-11.4 The Simple Linear Regression Model, Least Squares and the Fitted Model, Properties of the Least Squares Estimators
<b>Week 15</b> 11/1/2007	11.5 – 11.6 Inferences Concerning the Regression Coefficients and Prediction 11.12 Correlation

**Home work****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

**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 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 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 8**

**8.5** (215-216): 3,7,9

**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 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 11**

**11.12 396):** 4

**11.3 (358-360):** 1, 3, 4, 7

**11.4-11.6 (371-372):** 3, 5, 6, 11