

**KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS**

**STAT319: PROBABILITY & STATISTICS FOR ENGINEERS & SCIENTISTS
Fall 2011 (Term 111)**



Instructor:
Office: **Phone:** **Email:** instructor@kfupm.edu.sa
Webpage: <http://faculty.kfupm.edu.sa/math/instructor>
Office Hours:

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.

Text: Miller & Freund's Probability and Statistics for Engineers by Johnson, R. A., Freund, J. and Miller, I. (2011) 8th Ed, Boston, Pearson-Prentice Hall.

Software Package: The Student Edition of *STATISTICA* with a Lab Manual. A Lab syllabus is available with your lab instructor.

Please bring your book and a scientific Calculator with stat functions to every lecture.

Important Notes:

- It is the student's responsibility to observe the academic calendar for important dates.
- Only University issued excuses will be accepted and only within a week of return to class.
- Excessive Absences will earn you a DN in accordance with University rules.

Assessment:

Activity	Weight
<i>Class Work - Homework, Quizzes¹</i>	15%
<i>Lab Work (see Lab syllabus)</i>	15%
<i>First Major Exam (Chapters 1 – 3, & 11.1) Monday October 24, 5:30 – 6:45 pm</i>	15%
<i>Second Major Exam (Chapters 4 to 6) Monday November 28, 5:15 – 6:30 pm</i>	15%
<i>Final Exam (Comprehensive) Wednesday January 11, 2012, 7:30 am</i>	40%

You need to achieve at least 50% in order to pass the course.

Homework:

Will be assigned later, and is due in class on the first Saturday after we finish a chapter.

¹ Expect a quiz on the first Monday after you hand in the homework.

Syllabus²

Week	Dates	Topics
1	September 10 - 14 + First Lab Session	Ch 1. Introduction Ch 2. Treatment of Data 2.1 Pareto Diagrams and Dot Diagrams 2.2 Frequency Distributions 2.3 Graphs of frequency distributions
2	September 17 - 21	2.4 Stem-and-leaf displays Lab 2.6 Bar Chart and Pie Chart 2.5 & Lab 2.7 Descriptive measures (plus percentiles, ER, CV, CS)
	Saturday September 24	National Day
3*	September 26 - 28	2.6 & Lab 2.7 Quartiles and percentiles 2.7 The calculation of mean and variance (including grouped data)
4	October 1 - 5	Ch 11. Curve Fitting 11.1 The method of least squares Ch 3. Probability 3.1 - 3.2 Sample space and events and Counting
5	October 8 - 12	3.3 Probability 3.4 The Axioms of probability 3.5 Some elementary theorems
6	October 15 - 19	3.6 Conditional probability 3.7 Bayes' Theorem
7	October 22 - 26	Ch 4. Probability Distributions 4.1 Random variables 4.2 The binomial distribution 4.3 The hypergeometric distribution
8*	October 29 - 31	4.4 The mean and the variance of the distribution 4.7 – 4.8 The Poisson and geometric distributions.
	November 1 – 11	Eid Al-Adha Vacation
9	November 12 - 16	Ch 5. Probability Densities 5.1 Continuous random variables (includes mean & variance) 5.2 The normal distribution. 5.3 The normal approximation to the binomial
10	November 19 - 23	5.4 – 5.9 Other probability distributions (weibull, lognormal, etc) Ch 6. Sampling distributions 6.1 Populations and samples 6.2 – 6.3 Sampling distribution of the mean.
11	November 26 – 30	Ch 7. Inferences Concerning Means 7.1 – 7.2 Point and interval estimation concerning mean 7.4 Testing hypotheses concerning mean
12	December 3 - 7	7.4 - 7.6 Testing hypotheses concerning one mean 7.7 Relation between testing hypotheses and confidence intervals
13	December 10 - 14	Ch 8. Inferences Concerning Means 8.1-8.4 Inference concerning two population means
14	December 17 – 21	Ch 10. Inferences Concerning Proportions 10.1 -10.2 Estimation and hypotheses concerning one proportion
15	December 24 – 28	Ch 11. Curve Fitting 11.2 Inference based on least square estimators 11.6 Correlation
16*	December 31 – January 1, 2012	Review

* Weeks 3, 8 and 16 have two classes each.

² This refers to chapters of the textbook and the lab manual.