KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPT OF MATHEMATICS & STATISTICS
Spring 2012 (Term 112)

STAT319: PROBABILITY AND STATISTICS FOR ENGINEERS AND SCIENTISTS

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Office Hours: Sunday 10:00 am – 12:00 noon
Monday 10:00 – 10:50 am

Optional Meeting: "Homework Saturday" after maghrib, time and place TBA

Check Blackboard regularly for announcements

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.

Scientific Calculator: Students **MUST possess** their own individual scientific calculator. Calculators on mobile phones or other communication devices **WILL** be **STRICTLY** prohibited from use.

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
Class Work - Homework, Quizzes[1]		15%
Lab Work (see Lab syllabus)		15%
First Major Exam (Chapters 1-3)	*Sunday March 4, 2012, 6:00 pm Bldg. 59*	15%
Second Major Exam (Chapters 4-6)	*Saturday April 7, 2012, 6:00 pm Bldg. 59*	15%
Final Exam (Comprehensive)	*Monday May 21, 2012, 7:00 pm, TBA*	40%

Important Note: **Students. You need to achieve at least 50% in order to pass the course.**

Students are **REQUIRED** to carry a scientific calculator with **stat functions** to every lecture, lab and in the exam with them. Calculators **CANNOT** be **shared between students** in quizzes or exams. Usually once a chapter is finished, you expect a class test.

Homework: Will be assigned later, and is due the first Saturday after we finish a chapter.

Additional Practice Problems: see below.

Chapter 2 2.12, 2.16, 2.39. 2.40, 2.45, 2.63, 2.64, 2.68, 2.69.
Chapter 3 3.5, 3.12, 3.26, 3.29, 3.34, 3.35, 3.41, 3.48, 3.63, 3.65, 3.95.
Chapter 4 4.4, 4.10, 4.11, 4.26, 4.38,4.39, 4.59, 4.67, 4.80, 4.84, 4.86.
Chapter 5 5.4, 5.11, 5.14, 5.20, 5.21, 5.24, 5.36, 5.46, 5.58, 5.109, 5.114.
Chapter 6 6.5, 6.6,6.9, 6.20, 6.23,6.55, 6.61
Chapter 7 7.9, 7.11, 7.24, 7.49, 7.50, 7.62, 7.63,7.69, 7.86
Chapter 8 8.5, 8.6, 8.21
Chapter 10 10.5, 10.9, 10.20, 10.23, 10.50, 10.51
Chapter 11 11.4, 11.14, 11.15, 11.50, 11.51.

[1] There will be a quiz the first Monday after we finish a chapter

Syllabus

Week	Topic (or assigned readings)	Reminders
Week 1 **28/1- 1/2**	**Ch 1. Introduction** **Ch 2. Treatment of Data (refer also to Lab Manual chap 2)** 2.1 Pareto Diagrams and Dot Diagrams 2.2 Frequency Distributions	
Week 2 **4/2- 8/2**	**Ch 2. Treatment of Data** 2.3 Graphs of frequency distributions 2.4 Stem-and-leaf displays 2.5 & Lab 2.7 Descriptive measures (plus percentiles, ER, CV, CS) 2.7 The calculation of mean and variance (incl group mean & var)	
Week 3 **11/2- 15/2**	**Ch 2. Treatment of Data** 2.6 & Lab 2.7 Quartiles and percentiles **Ch 3. Probability** 3.1 - 3.2 Sample space and events and Counting 3.3 Probability	
Week 4 **18/2- 22/2**	**Ch 3. Probability** 3.4 The Axioms of probability 3.5 Some elementary theorems 3.6 Conditional probability	
Week 5 **25/2- 29/2**	**Ch 3. Probability** 3.7 Bayes' Theorem **Ch 4. Probability Distributions** 4.1 Random variables	
Week 6 **3/3- 7/3**	**Ch 4. Probability Distributions** 4.2 Binomial distribution 4.3 Hypergeometric distribution	**Major Exam 1** **(Tuesday, Mar 6, 2012, 6:00pm)**
Week 7 **10/3- 14/3**	**Ch 4. Probability Distributions** 4.4 The mean and the variance of the distributions 4.7 – 4.8 Poisson and geometric distributions. **Ch 5. Probability Densities** 5.1 Continuous random variables (includes mean & variance) 5.2 The normal distribution	
Week 8 **17/3 - 21/3**	**Ch 5. Probability Densities** 5.3 The normal approximation to the binomial 5.4 – 5.9 Other probability distributions (weibull, lognormal,etc)	
	Midterm Vacation (March 24-28)	
Week 9 **31/3 - 4/4**	**Ch 6. Sampling distributions** 6.1 Populations and samples 6.2 – 6.3 Sampling distribution of the mean 6.4 Sampling distribution of variance	
Week 10 **7/4 - 11/4**	**Ch 7. Inferences Concerning Means** 7.1 – 7.2 Point and interval estimation concerning mean 7.4 Testing hypotheses concerning mean	**Major Exam 2** **(Thursday, April 5, 2012, 6:00pm)**
Week 11 **14/4 - 18/4**	**Ch 7. Inferences Concerning Means** 7.4 - 7.6 Testing hypotheses concerning one mean 7.7 Relation between testing hypotheses and confidence intervals	
Week 12 **21/4 - 25/4**	**Ch 8. Inferences Concerning Means** 8.1-8.4 Inference concerning two population means	
Week 13 **28/4 - 2/5**	**Ch 10. Inferences Concerning Proportions** 10.1 -10.2 Estimation and hypotheses concerning one proportion **Ch 11. Curve Fitting** 11.1 The method of least square	
Week 14 **5/5 - 9/5**	**Ch 11. Curve Fitting** 11.2 Inference based on least square estimators	
Week 15 **12/5 – 16/5**	11.6 Correlation **Review**	**Final Exam** **(Mon, May 21, 2012, 7:00pm)**