King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics

Stat 319: Probability and Statistics for Engineers and Scientists
Spring Semester (Term 122)

Coordinators: Walid Sharabati and Raid Anabosi

Instructor: **Raid F. Anabosi.**
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Office Hours: **SMW: 8:00 – 8:50 and 10:00 – 10:50 AM or by appointment.**

Text: Applied Statistics and Probability for Engineers by D. Montgomery and G. Runger, 5th Edition, Wiley, 2011.

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

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, solving them and thereby making meaningful decisions.

Assessment:

Activity	Weight
Attendance and Class Responses (3), Homework (4), Quizzes (8)	*15%*
Lab Work (see Lab syllabus)	*20%*
First Major Exam (Chapters 2, 3 and 4): Monday, March 4, 2013 at 6:00pm – Building 10 (Auditorium)	*15%*
Second Major Exam (Chapters 6, 7 and 8): Monday, April 15, 2013 at 6:00pm – Building 10 (Auditorium)	*15%*
Final Exam (Comprehensive): 7:00pm, Saturday, May 18, 2013	*35%*

Usually once a chapter is finished, you should expect a quiz on the material. Homework will be assigned through Blackboard in synchrony with the lectures.

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. Mobile phones or other communication devices will be strictly prohibited to use.

Important Notes:

- ✓ In accordance with University rules, ***20% or 9 (nine) unexcused absences*** will automatically result in a grade of ***DN***.
- ✓ ***Attendance*** on time is ***very*** important. Mostly, attendance will be checked within the ***first five minutes*** of the class. Entering the class after that, is considered as one late, and ***every two times late*** equals to one absence.

Homework Problems:

- ➢ Problems to be discussed will be posted on the WebCT or in the instructor home page. Students are expected to solve as many problems.

Schedule

WEEK	Topic	Reminders
Week 1 Jan. 26-30	**Ch 2: Probability** 2.1 Sample Space and Events 2.2 Axioms of Probability 2.3 Addition Rule 2.4 Conditional Probability	January 29: Last day for late registration; Last day for adding courses.
Week 2 Feb. 2-6	2.5 Multiplication Rule 2.6 Independence 2.7 Bayes' Theorem 2.8 Random Variable **Ch 3: Discrete Probability Distributions** 3.1 Discrete Random variables 3.2 Probability Mass Functions 3.3 Cumulative Distribution Functions	February 6: Last day for dropping course(s) without record
Week 3 Feb. 9-13	3.4 Mean and Variance 3.5 Discrete Uniform Distribution 3.6 Binomial Distribution 3.7 Geometric Distribution	
Week 4 Feb. 16-20	3.8 Hypergeometric Distribution 3.9 Poisson Distribution **Ch 4: Continuous Probability Distributions** 4.1 Continuous Random Variables 4.2 Probability Density Functions 4.3 Cumulative Distribution Functions	
Week 5 Feb. 23-27	4.4 Mean and Variance 4.5 Continuous Uniform Distribution 4.6 The Normal Distribution 4.7 Normal Approximation to the Binomial and Poisson Distributions	
Week 6 Mar. 2-6	4.8 Exponential Distribution **Ch 7: Sampling Distributions** 7.1 Point Estimation	March 2nd: Midterm Grade Reports due in the Deanship **Major Exam 1: Monday, March 4th** March 6: Last day for Dropping **courses** with "W" online
Week 7 Mar. 9-13	7.2 Sampling Distributions and the Central Limit Theorem **Ch 8: Statistical Intervals for a Single Sample** 8.1 Confidence Interval for the Mean of a Normal Distribution with Known Variance	

Week 8 Mar. 16-20	8.2 Confidence Interval for the Mean of a Normal Distribution with Unknown Variance 8.4 Large Sample Confidence Interval for a Population Proportion	
Midterm Vacation: Thursday, March 21, 2013 to Friday, March 29, 2013		
Week 9 Mar. 30 - Apr. 3	**Ch 9: Tests of Hypotheses for a Single Sample** 9.1 Hypothesis Testing 9.2 Tests on the Mean of a Normal Distribution with Known Variance	
Week 10 Apr. 6-10	9.2 Tests on the Mean of a Normal Distribution with Known Variance 9.3 Tests on the Mean of a Normal Distribution with Unknown Variance	April 10: Last day for withdrawal from **all courses** with grade of "W" thru URO
Week 11 Apr. 13-17	9.5 Tests on a Population Proportion **Ch 10: Statistical Inference for Two Samples** 10.1 Inference on the Difference in Means of Two Normal Distributions with Known Variances 10.2 Inference on the Difference in Means of Two Normal Distributions with Unknown Variances	**Major Exam 2: Monday, April 15th**
Week 12 Apr. 20-24	10.4 Paired t-test 10.6 Inference on Two Population Proportions	
Week 13 Apr. 27 – May 1	**Ch 11: Simple Linear Regression and Correlation** 11.2 Simple Linear Regression 11.4 Hypothesis Tests in SLR	
Week 14 May 4-8	11.5 Confidence Intervals 11.6 Prediction of New Observations	May 8: Last day for withdrawal from all courses with grade of "WP/WF"
Week 15 May 11-15	11.8 Correlation Review	May 15: Last day of classes

May 18, 2013: Final Exam at 7:00pm
May 29, 2013: Last Day to Submit Final Grades