Brief Course Description: STAT 324	
Course Designation	STAT 324
Course Name	PROBABILITY AND STATISTICS FOR ENGINEERS AND SCIENTISTS
No. of Credits	3 (2+1)
Prerequisites	None
Co - requisite Course	None
Credit Distribution	2+1
Course level	Fifth level
Teaching language	English
College(s) in which the course is offered	College of Engineering - College of Computer Science and Information - College of Planning and Construction
Main topics (detailed contents are enclosed)	Probability rules - Bayes rule - Random variables - Discrete and continuous distributions - Sampling distributions - Statistical inference: Estimation & Hypotheses Testing of one (two) population(s) mean(s) and one (two) population(s) proportion(s).
Course Objectives	The objectives of the course are to define and clarify the concept of both randomness in the data and the mathematical treatment for these data. Also, the mathematical models that describe different types of data are defined. In addition, the mechanism of decision making about the parametric values of simple models is given with special focus to the needs of the engineers and scientists.
Methods of teaching	Lectures, labs and home works.
Recommended book(s)	Probability and Statistics for Engineers and Scientists by R. E. WALPOLE and R.H. MYERS: Macmillan Publishing.
Main references	1- Introduction to Theory of Statistics by A. Mood, F. Graybill & B. Boes 2- Mathematical Statistics by Steven Arnold 3- Mathematical Statistics by Hogg & Craig
Method of course evaluation	Two mid-term exams, works, assignments and final exam.
First midterm exam.	Time: 90 minutes Date: week No. 6 or 7.
Second midterm exam.	Time: 90 minutes Date: week No. 11 or 12.
Distribution of course scores	Class marks: 50 Final exam: 50
Duration of the final exam.	3 hours.
Date of the file accreditation	

The main topics (detailed contents)	**Probability:** Sample space, events, counting sample points and random events. Probability rules and additive rule. Conditional probability, multiplication rule and independent events. Total probability rule, Bayes' theorem. **Random Variable:** Discrete and continuous distributions. Mean and variance of a random variable. Mean of linear combination of random variables. Chebyshev's theorem. **Some Probability Distributions:** Uniform, Binomial, Hyper-geometric and Poisson distributions. Some of the common continuous distributions: Uniform, Exponential and Normal distributions. Applications of the normal distribution. **Random Sampling:** Some important sample statistics. Sampling distribution of the mean from normal distribution with known and unknown variance, t-distribution. **Estimation:** Statistical inference, classical estimation, estimation of a single population mean, point estimate, standard error of a point estimate. Estimating a confidence interval for: single population mean, the difference between two independent samples means, a single population proportion. **Hypotheses Testing:** Testing hypothesis about: single population mean, difference between two independent populations' means. Testing hypothesis about: single population proportion, difference between two populations' proportions.

Chairman of Department of Statistics and Operations Research

Name: Ahmad M. Alshamrani Signature: