**Brief Course Description**: **STAT 324 (Probability and Statistics for Engineers and Scientists)**

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| STAT 324 | Course Designation |
| Probability And Statistics for engineers AND SCIENTISTS | Course Name |
| 3 | No. of Credits |
| None | Prerequisites |
| None | Co - requisite Course |
| 2+0+1 | Credit Distribution |
| Fifth level | Course level |
| English | Teaching language |
| College of Engineering - College of Computer Science and Information - College of Planning and Construction | College(s) in which the course is offered |
| Introduction to statistics and data analysis,  Probability: 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). | Main topics  (detailed contents are enclosed) |
| 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. | Course Objectives |
| Lectures, labs and home works. | Methods of teaching the course |
| Probability and Statistics for Engineers and Scientists by R. E. WALPOLE and R.H. MYERS: Macmillan Publishing. | Recommended book(s) |
| 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 | Main references |
| Two mid-term exams, works, assignments and final exam. | Method of course evaluation |
| Time: 90 minutes Date: week No. 6 or 7. | First midterm exam. |
| Time: 90 minutes Date: week No. 11 or 12. | Second midterm exam. |
| Class marks: 50 Final exam: 50 | Distribution of course scores |
| 3 hours. | Duration of the final exam. |
|  | Date of the file accreditation |

**Chairman of Department of Statistics and Operations Research**

**Name: Mansour Sharahili Signature:**

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| **Introduction to statistics**  Population and samples, Parameters and statistics, measures of location or central tendency (The mathematical mean), measures of variation or dispersion (the variance and the standard deviation)  **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. | The main topics  (detailed contents) |

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