 **INSTITUTE OF AERONAUTICAL ENGINEERING**

**(Autonomous)**

Dundigal, Hyderabad -500 043

**COMPUTER SCIENCE AND ENGINEERING**

**SYLLABUS**

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| **UNIT-I** | **SINGLE RANDOM VARIABLES AND PROBABILITY DISTRIBUTION** |
| Random variables: Basic definitions, discrete and continuous random variables; Probability distribution: Probability mass function and probability density functions; Mathematical expectation; Binomial distribution, Poisson distribution and normal distribution. | |
| **UNIT-II** | **MULTIPLE RANDOM VARIABLES** |
| Joint probability distributions, joint probability mass, density function, marginal probability mass, density functions; Correlation: Coefficient of correlation, the rank correlation; Regression: Regression coefficient, the lines of regression, multiple correlation and regression. | |
| **UNIT-III** | **SAMPLING DISTRIBUTION AND TESTING OF HYPOTHESIS** |
| Sampling: Definitions of population, sampling, statistic, parameter; Types of sampling, expected values of sample mean and variance, sampling distribution, standard error, sampling distribution of means and sampling distribution of variance.  Estimation: Point estimation, interval estimations; Testing of hypothesis: Null hypothesis, alternate hypothesis, type I and type II errors, critical region, confidence interval, level of significance. One sided test, two sided test. | |
| **UNIT-IV** | **LARGE SAMPLE TESTS** |
| Test of hypothesis for single mean and significance difference between two sample means, Tests of significance difference between sample proportion and population proportion and difference between two sample proportions. | |
| **UNIT-V** | **SMALL SAMPLE TESTS AND ANOVA** |
| Small sample tests: Student t-distribution, its properties: Test of significance difference between sample mean and population mean; difference between means of two small samples. Snedecor’s F-distribution and its properties; Test of equality of two population variances Chi-square distribution and it’s properties; Test of equality of two population variances Chi-square distribution, it’s properties, Chi-square test of goodness of fit; ANOVA: Analysis of variance, one way classification, two way classification. | |

**TEXT BOOKS:**

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| 1 | Erwin Kreyszig, “Advanced Engineering Mathematics”, John Wiley & Sons Publishers,  9th Edition, 2014. |
| 2 | B. S. Grewal, “Higher Engineering Mathematics”, Khanna Publishers, 42nd Edition, 2012. |

**REFERENCES:**

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| 1 | T.K.V Iyengar, B.Krishna Gandhi, “Probability and Statistics”, S. Chand & Co., 6th Edition,  2014. |
| 2 | G.C.Beri , “Business Statistics”, Tata McGraw-Hill Publications, 2nd Edition, 2005. |
| 3 | Richard Arnold Johnson, Irwin Miller and John E. Freund, “Probability and Statistics for Engineers”, Prentice Hall, 8th Edition, 2013. |